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Mr. Harscourt

DOMINION OF CANADA  
DEPARTMENT OF AGRICULTURE  
DOMINION EXPERIMENTAL FARMS

# EXPERIMENTAL STATION

LACOMBE, ALBERTA

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REPORT OF THE SUPERINTENDENT  
F. H. REED, B.S.A.

FOR THE YEAR 1926

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# DOMINION EXPERIMENTAL STATION, LACOMBE, ALBERTA

## THE SEASON

The winter of 1925-26 will be remembered as one of the mildest in the memory of the oldest settler. Only on three nights during January, February and March, 1926, was the temperature lower than 10 degrees below zero. The coldest night was on February 13 when the minimum was 15 degrees below zero. There was about the average snowfall but with frequent thaws there was never much snow on the ground. Rain was recorded in both January and February, a most unusual occurrence in central Alberta. April and May were warm and bright with most favourable conditions for seeding, which started on April 19 with the soil in ideal condition. There was an abundance of moisture in the land for quick germination and on May 30 and 31, when seeding was almost completed, a total of 2.53 inches, one of the heaviest rains on record, provided a bountiful supply of moisture for continued rapid growth. There had been no winter killing of grain or grass crops and for the first time in the history of the Station sweet clover had not been winter-killed. With 4.46 inches of rain in May and June all grasses made a luxuriant growth, providing excellent pastures and heavy crops of hay. Fall rye and the five experimental plots of fall wheat had wintered almost perfectly and together with spring seeded cereals made excellent growth during June and July. One of the heaviest crops on record seemed assured, when the wettest August and September recorded in nineteen years, with a total precipitation of 8.88 inches of rain and snow, caused very slow ripening. Much of the crop suffered serious frost injury, as September, 1926, also established a new minimum when on the 3rd of the month 26.5 degrees of frost were registered, or 9 degrees colder than the previous cold record of September, 1907. Fortunately the weather was again warm and dry until November 16, and the heavy crop was cut and threshed in fair condition. The last half of November and all of December were unusually cold, with a snowfall of 21 inches, very little of which melted. The total precipitation for the year 1926 was 23.49 inches or over  $\frac{1}{2}$  inch more than the previous record of 22.91 inches received in 1916.

During the wet summer weather a great deal of breaking was done on new land and during the wet fall much more than the usual fall ploughing was done. The heavy fall of snow in November is afforded excellent protection for winter crops.

METEOROLOGICAL RECORDS, 1926

	Temperature (F)						Precipitation (inches)				Sunshine (hours)		Wind	Evaporation	
	Mean		Maximum		Minimum		Rain		Snow		Total Precipitation	1926	Average 19 years	Miles	Inches.
	1926	Average 19 years	Highest	Mean Maximum	Lowest	Mean Minimum					1926	Average 19 years			
January.....	21-12	9-93	43-8	33-16	-12-0	9-24	0-25	8-5	1-10	0-93		80-0	82-30	4,674	.....
February.....	20-17	12-30	59-0	34-46	-15-0	10-37	0-08	10-5	1-13	0-60		130-1	124-74	4,068	.....
March.....	30-13	21-18	57-0	42-27	-2-0	17-98	0-33	5-5	0-88	0-64		187-3	161-30	5,491	.....
April.....	42-13	37-23	80-0	54-08	-3-0	27-22	0-39	.....	0-39	1-11		292-7	209-80	6,356	1-852
May.....	51-05	48-63	80-0	65-60	23-0	36-50	3-44	.....	3-44	1-93		268-2	236-6	6,454	3-545
June.....	46-86	55-40	83-5	67-58	31-0	41-40	2-02	.....	2-02	3-28		260-2	256-5	5,614	3-483
July.....	62-0	59-83	94-0	77-70	34-0	46-30	2-66	.....	2-66	2-83		320-5	293-0	4,543	4-864
August.....	54-98	58-42	84-0	67-50	32-5	42-45	5-02	.....	5-02	2-62		235-4	254-6	4,445	3-563
September.....	42-10	48-22	77-0	53-21	5-5	22-17	2-55	13-1	3-86	1-66		138-5	189-3	5,104	2-275
October.....	41-39	40-26	79-0	53-71	11-0	29-07	0-57	0-5	0-62	0-71		182-7	149-1	5,384	0-760
November.....	20-37	26-06	64-0	28-7	-15-0	12-0	0-15	13-40	1-39	0-63		70-6	108-7	4,215	.....
December.....	10-23	13-44	53-0	48-1	-34-0	-2-84	0-15	8-25	0-98	0-62		90-4	84-94	5,845	.....
Totals.....							17-61	51-5	23-49	17-64		2,256-6	2,150-88	62,193	20-342

## ANIMAL HUSBANDRY

### HORSES

The horses at the Station number thirty-three head, and consist of twelve stallions, seven pure-bred Clydesdale mares, eleven grade work horses, two bred hackneys, one driving mare, one two-year-old filly cross-bred Shire, Clydesdale, six yearlings and three foals, crosses and pure-bred.

The most important phase of the work with horses is the breeding operation. Two Shire stallions, Snelston Topper a seven-year-old, and Rising Sun a young horse rising three years old, are now available to the public for breeding purposes. The past year was the first breeding season Snelston Topper has been at the Station, hence none of his get are available to demonstrate the worth of this horse, but the big, strong-limbed young stock got by Jupiter and Hawton Carlton amply demonstrate that the Shire can be of good advantage on the mares of central Alberta. The foals got by these are big growthy colts, decidedly above the average in size. They promise to be real drafters, with strong bone and sufficient quality to make them topplers in any company.



Brood mares owned by farmers of central Alberta, shipped to the Station to be bred by Shire stallions.

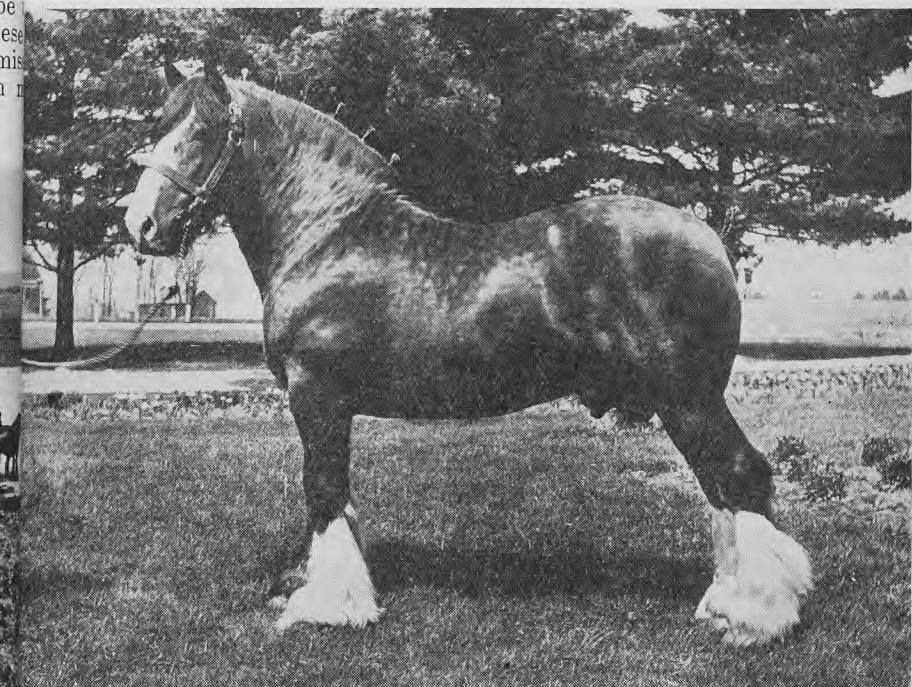
Mares for breeding to the Shire stallion have been shipped in from a wide area, from High River south of Calgary, from Edmonton on the north to Coronation and Medicine Hat on the east. While many pure-bred mares have been bred, and some pure-bred Clydesdales and Percherons, a large majority of the mares have been good grades of the draft breeds. Farmers have been so favourably impressed with the extra size combined with quality of their foals, yearlings and two-year-olds, that a number who first bred mares in 1923 have returned their mares every year since. At the Station extra pasture and water are provided, and as all mares gain in condition, this has doubt helped in the very high percentage of mares proving in foal.

Snelston Topper (imp.) now heads the Shire stud at the Experimental Station. He is a worthy successor to the International Grand Champion



arden Jupiter," well known by many horsemen of the West. He is a beauty of great scale, compact and short coupled, with good quality legs and a true mover.

Snelston Topper (imp.) is sired by the 1922 London grand champion, Har-Nulli Secundus 33231, and out of Stock's Beauty 86529, a daughter of Copford 28227. Harboro Nulli Secundus is a sensational horse and was not only senior and grand champion at the London Shire Show in 1922, but came back in 1923 and repeated this distinguished performance and in addition won King's challenge cup; the Shire Horse Society's gold challenge cup, value guineas, for the best stallion in the show; the Society's Champion cup, value for the best stallion in the show; and the Society's cup, value £20, for the best stallion in the aged classes. Snelston Topper (imp.) is a worthy son of this great sire.



Snelston Topper (imp.) (1608) (38528), heading the shire stud at the Dominion Experimental Station, Lacombe.

Rising Sun L.E.S. (1641) is a young stallion of the Station's own breeding. He is by Hawton Carlton (1609) (38846), by Shopnoller Drayman (30915), and out of Coxall Day Dawn (1532) (102419), a mare of great scale and quality. Rising Sun L.E.S. is a colt of great promise, weighing an even ton at two and one-half years of age. This young horse promises to develop into one of the largest sires in Canada as he stands  $17\frac{1}{2}$  hands high and has an abundance of bone of good quality to carry his weight.

#### COST OF WINTERING IDLE WORK HORSES

Thirteen horses were wintered in the open with a good bush for shelter on north side of the feed lot. Water was always available in a trough with a milk heater. Oat straw was kept in a feed rack all the time and one feed of green feed sheaves or hay was given each day. When hay was fed it was of

rather mixed and inferior quality. Owing to special circumstances some were removed and others added during the winter but the total horse-days equal to the feeding of thirteen horses for the entire feeding period from November 20 to March 29 inclusive. Four head showed loss in weight; one mare gained nor lost; and eight head showed slight gains. However, the net loss was nil so that all feed consumed was for maintenance only. Begun on February 20, 50 pounds of oats were fed per day to the lot of horses.

Total feeds consumed and costs are as follows:—

Green feed sheaves.....	23,770 lb. at \$ 7 00 per ton.....	\$ 83 19
Straw .....	19,750 lb. at 1 50 per ton.....	14 81
Hay .....	2,750 lb. at 15 00 per ton.....	20 62
Rye hay.....	2,140 lb. at 7 00 per ton.....	7 49
Oats .....	1,900 lb. at 0 01 per lb.....	19 00

Total .....\$ 145 11

Total horse-days on feed, 1,463.

Total cost, \$145.11.

Average cost per day per horse, 9.92 cents.

Average cost per horse, \$11.16.

## BEEF CATTLE

The beef herd at the Experimental Station consists of forty head of bred Aberdeen-Angus, divided as follows: Two herd sires, eight young five steers and twenty-five head of females ranging in age from mature to calves. The object of maintaining a breeding herd of pure-bred Aberdeen-Angus at the Station is to provide a supply of breeding stock, mainly for farmers at reasonable prices, and also to provide cattle for use in feeding breeding experiments. This herd has been used principally as a source of breeding stock for cattle-breeders of the district. During the past season ten bulls and fifty-seven females were disposed of to breeders in Manitoba, Saskatchewan, Alberta and British Columbia.

The Aberdeen-Angus herd was started in 1913 from a small number of choicely bred females and the good bull Elm Park Ringleader 7th—281—bred by Jas. Bowman, Guelph, Ont.; sired by Prince of Benton (imp)—81—The second bull used in the herd was Elm Park Wizard—4169—, also bred by Jas. Bowman; sired by Elm Park Ringleader 3rd—1654, and out of the imp cow, Witch of Benton, by Esmond of Ballindalloch (8304). The next bull in the herd was Metaphor of Glencarnock 2nd—17101—; sired by Edward of Glencarnock—5948—, out of the imported cow Norma Gordon of Glencarnock—5663—. This bull was a deep, thick set animal but was used for a short time only. The next herd sire Eliminator of Gwenmawr 3rd—17474— was also bred by Edward of Glencarnock and was out of Blackbird McHenry 83rd. This was of outstanding breed character, type, conformation and quality. He was a very prepotent sire in that his calves were all thick fleshed, with an abundance of quality and breed type. This bull lacked a little in size and was followed by Glencarnock Prideman 3rd, a growthy, smooth, straight-lined bull, weighed 1,300 pounds at 18 months of age. He was sired by Blackcap McHenry—12813— and he by Edward of Glencarnock—5948—. It will be seen that the last three bulls mentioned all trace back to the great sire Edward of Glencarnock.

The present senior herd bull Prideman Glencarnock 4th—31949— is sired by the famous 1923 International Grand Champion bull, Blackcap Revolver—287269—, which in turn was sired by the great bull Earl Marshall and out of the wonderful breeding cow Blackcap McHenry 104th. Prideman Glencarnock 4th is out of Pride of Larkin Farm 46th, hence combines blood of the Pride of Aberdeen, Blackcap and Eisa Erica families. This bull has

ne very fine young stock. One of his oldest daughters won the female grand championship over some of the best show animals of the province. Prideman Glencarnock 4th is a remarkably strong-topped bull with straight lines and transmits these characters to his offspring.

The junior herd sire, Earl Eric of Glencarnock—32463—is an Enchantress ca on both his sire's and dam's side. He is sired by Eurotas of Glencarnock 449—. Earl Eric of Glencarnock was shown as a senior yearling at the 24 Toronto Royal and Chicago International, and stood first in his class at Toronto Royal and second in his class at the Chicago International. He is also shown at the Calgary and Edmonton Exhibitions in 1925 where he won st and junior champion at both and was reserve grand champion at Edmonton. is a thick-fleshed, low-set bull of excellent breed type; he has a good strong and carries quality and refinement to an unusual degree. His calves are promising, showing the high quality, low set, early maturing type of their e. This bull should cross to advantage on the stronger-boned progeny of the preceding sires.

The breeding females of all ages are representatives of the choicest Aberdeen-Aus families. They are classified according to families as follows:—

“Miss Burgess” family,—

Miss Burgess McGregor 16th—35697—

“Blackcap” family,—

Blackcap Glencarnock 7th—33111—

“Enchantress Erica” family,—

Evera 2nd—23554—

“Ballindalloch Blackbird” family,—

L.E.S. Blackbird—21983—

Witch L.E.S. 4th—32147—

Lady Blackbird L.E.S.—32048—

Blackbird Revolution L.E.S.—35787—

Lacombe Blackbird—36368—

“Pride of Aberdeen” family,—

L.E.S. Norma Gordon—21978—

L.E.S. Norma Gordon 2nd—28821—

“Queen Mother” family,—

L.E.S. Flower Queen 3rd—18965—

L.E.S. Blackbird Queen—27630—

L.E.S. Queen of Ballindalloch—27638—

Queen Blackbird L.E.S.—31799—

Queen Revolution L.E.S.—35783—

“Millicent” family,—

L.E.S. Princess Millicent—10068—

Lacombe Millicent 4th—37703—

“May flower” family,—

L.E.S. May apple Yorklawn 2nd—11105—

Lacombe May apple—37330—

“Keepsake” family,—

Revolution Keepsake L.E.S.—34699—

“Kinochtry Princess” family,—

L.E.S. Princess Erica—23746—

#### COST OF WINTERING DRY BEEF COWS IN CALF

Twenty-nine head of dry cows and heifers in calf were put into winter stalls with a straw shed for shelter from storms. Owing to sales from the lot and removing a few cows to prepare for calving toward spring, the number was not always constant. Therefore, the feeding period is reduced to a basis of cow-days when the final cost is being calculated. Straw was kept in a large feed-rack before the cows at all times; silage was fed daily, and some odd lots of green shed sheaves that were not in condition to put in the barn were thrown into the racks. During the latter part of March and the month of April it was necessary to supplement the limited supply of straw with slough hay and alfalfa hay. During the last half of April a limited amount of wheat bran was mixed with silage. Water was always available in a trough in the yard, with tank heater, and salt was supplied.

The total weights and values of feeds consumed is as follows:—

Silage .....	121,612 lb. at	\$ 5 00 per ton.....	\$ 304 03
Straw .....	45,155 lb. at	1 50 per ton.....	33 87
Green feed.....	8,245 lb. at	7 00 per ton.....	28 85
Slough hay.....	2,040 lb. at	10 00 per ton.....	10 20
Alfalfa hay.....	1,497 lb. at	21 20 per ton.....	15 87
Bran .....	350 lb. at	25 00 per ton.....	4 37

Total .....\$ 397 19

Total number cow-days on feed, 3,465.

Total cost of all feeds, \$397.19.

Average cost per cow per day, 11.4 cents.

Average cost per cow for six months, \$20.52.

Average cost per month per cow, \$3.42.

#### COST OF FITTING BULLS FOR SALE

Beginning January 1, 1926, five pure-bred Aberdeen-Angus bulls were on feed to be fitted for the spring bull sales. One bull was sold April 27, and the remaining four were continued on the test until May 31, and were at the Lacombe Bull Sale June 1, 1926.

All data respecting the feeding trial are given in the following table:—

Date commencement of test—January 1, 1926—

Number of bulls on test.....	5
Average initial age.....days	580
Average initial weight per head.....lb.	1,067
Average final weight per head.....lb.	1,337
Average gain per head.....	270
Days on test (total bull days).....	721
Total gain .....	1,352
Average daily gain per head.....lb.	1.875
Average cost per 100 lb. of gain.....\$	12.49

The largest individual gain was 325 pounds being an average of pounds per day for 151 days. The smallest gain was made by the bull was sold on April 27, being a total of 172 pounds in 117 days an average of 1.47 pounds per day. The largest monthly gains were made in February and the smallest gains in May.

At the conclusion of the test the bulls were all in first class sale condition.

Feed prices on which cost was based are as follows:—

Oats—2,297 lb. at \$1 per 100 pounds.
Barley—2,075 lb. at \$1 per 100 pounds.
Bran—1,480 lb. at \$25 per ton.
Oilcake—591 lb. at \$48 per ton.
Silage—5,402 lb. at \$5 per ton.
Alfalfa hay—2,359 lb. at \$21.20 per ton.
Green feed—1,800 bundles at 3 cents per bundle.

#### DAIRY CATTLE

The dairy herd consists of 47 head of pure-bred Holsteins, 40 female and 7 male. Usually from 15 to 20 cows are milked daily. All heifers are placed on Record of Performance as they freshen and unless serious udder trouble or some other cause prevents, they are tested weekly on R.O.P. for several years. This necessitates milking three times a day. Some of the most promising cows are placed on the Record of Merit test for 7-, 14-, 21-, 28-, and 30-day records. For R.O.M. the cows are milked four times a day. After years of careful testing for production and the weeding out of all poor producers and off-type animals, the herd is now very smooth and uniform in type.

The herd bull is Mutual Pontiac Korndyke, 34197, born August 20, 1911. Both his sire and dam are by King Segis Pontiac Alcartra 11th, a 34-point son of the \$50,000 century sire, King Segis Pontiac Alcartra, 79602-A. His sire's dam has a 9-year-old R.O.P. record of 22,354 pounds of milk and 10 pounds butter. His dam has a 5-year-old R.O.P. record on twice-a-day milking



19,140 pounds milk and 843.75 pounds butter, and a 6-year-old R.O.P. record of 20.093 pounds milk, and 857.5 pounds butter also on twice-a-day milking only.

Lawncrest Rosa Echo, 15021, one of the original foundation cows still in the herd is also worthy of mention. This cow was borne November 10, 1909, and at 17 years of age is still a regular breeder. She has produced 14 calves, of which were females, and is again in calf to Mutual Pontiac Korndyke. She is a half sister of the world famous May Echo Sylvia and with deep body, straight lines and rugged constitution she is the type of cow which has made the Holstein so popular in Alberta.

The R.O.P. and R.O.M. records of cows now in the herd will give the reader some idea of the dairy qualities of this herd. Unfortunately some of the best males have been prevented from making outstanding records through udder trouble or some other uncontrollable cause. The eradication of tuberculosis and the ravages of infectious abortion have tended to retard the production of high records, but both of these troubles are now under control. In the treatment for abortion, which at one time caused very serious losses, Dr. P. R. Albot, Provincial Veterinarian for Alberta, has given invaluable advice and assistance. Sterility, the frequent aftermath of abortion, has now been remedied and all the cows in the herd are regular breeders. The herd has been tested for tuberculosis since the inception of the accredited herd policy and has been fully credited for three years.

#### HERD MANAGEMENT

The production of R.O.P. and R.O.M. records and the development and distribution of breeding stock of known merit does not lend itself readily to experimental work. While some experimental work is under way this has not been carried to its ultimate conclusion and is not presented in this report. A notable feature of the experimental work in dairy cattle is the apparent elimination of infectious abortion from the herd by the use of sanitary treatment and judicious feeding. Any cows showing any of the symptoms of infectious abortion were isolated and kept disinfected and not bred until all discharges had ceased. The breeding stock receives a mineral mixture to supplement the possible lack of these constituents in the feed. The result of careful feeding and sanitary treatment has been that practically all females are breeding regularly. The mineral mixture being fed is as follows:—

	Pounds
Calcium phosphate.....	10
Sodium phosphate.....	10
Epsom salts.....	12
Glauber salts.....	4
Sulphur.....	10
Potassium iodide.....	$\frac{1}{3}$

This mixture is fed at the rate of one tablespoonful per cow per day. Fifteen cows and heifers have Canadian Record of Merit records. Two cows L.E.S. Evergreen Johanna and L.E.S. Rosa Gretchen have 7-day R.O.M. records of over 27 pounds of butter. The two-year-old records by heifers mentioned at the bottom of the table indicate that these heifers will be real milkers. Short records are not featured at this Station as the forcing necessary to make high R.O.M. records has a tendency to interfere with the yearly or R.O.P. record. In addition to this the short record does not indicate the true value of the animal to the same extent that a yearly record does.

Eighteen of the cows in the herd in 1926 have Canadian Record of Performance records. Twelve of these cows have records of over 16,000 pounds milk, and the average of the 27 R.O.P. records is 16,126 pounds milk and 666.8 pounds butter. The average production of the herd, including heifers in 1926 was 16,040 pounds milk. The record of L.E.S. Evergreen Gretchen of 21,512



pounds milk and 875.00 pounds butter is really more valuable than that Echo Lady, the cow holding the highest milk record in the herd, 21.885 milk, and 848.7 pounds butter. Some of the younger 2- and 3-year-olds are very promising and will no doubt make very creditable records as cows.

## CANADIAN RECORD OF PERFORMANCE RECORDS HELD BY FEMALES IN THE HERD DURING K

Name and Number of cow or heifer	Age at commencement of test	Days milking	Pounds of milk	Pounds of butter-fat	Pounds of 80% butter
May Echo Lady, 39918.....	6	365	21,885	679	848.7
L.E.S. Evergreen Gretchen, 75005.....	1½	365	13,628	449	561.2
L.E.S. Evergreen Gretchen, 75005.....	3	365	17,537	660	825.0
L.E.S. Evergreen Gretchen, 75005.....	5	365	21,512	700	875.0
L.E.S. Princess Helbon, 91371.....	2	365	17,839	620	775.0
L.E.S. Princess Helbon, 91371.....	4	365	20,707	702	877.5
L.E.S. Korndyke Rosa Echo, 35780.....	5	365	19,244	621	776.0
L.E.S. Nina Alcartra, 91370.....	2	365	18,185	562	702.5
L.E.S. Johanna Alcartra, 75007.....	2	365	17,718	624	780.0
L.E.S. May Echo Mechthilde, 70080.....	2	365	12,992	409	511.0
L.E.S. May Echo Mechthilde, 70080.....	3	274	12,658	388	485.0
L.E.S. May Echo Mechthilde, 70080.....	5	365	17,237	503	628.7
L.E.S. May Echo Korndyke, 94302.....	2	305	12,385	287	524.0
L.E.S. May Echo Korndyke, 94302.....	3	365	16,974	632	790.0
Johanna Korndyke L.E.S., 107866.....	2	365	16,444	516	645.0
L.E.S. Korndyke Rosa, 34367.....	8	305	14,783	496	620.0
L.E.S. Korndyke Rosa, 34367.....	9	365	16,402	548	685.0
L.E.S. May Echo Gretchen, 75006.....	2	365	16,068	530	662.5
L.E.S. Evergreen Johanna, 56199.....	3	365	15,530	492	615.0
L.E.S. Evergreen Johanna, 56199.....	5	349	16,014	558	697.5
L.E.S. Evergreen Johanna, 56199.....	7	329	15,368	528	660.0
Nina Gem Mechthilde L.E.S., 107865.....	3	365	15,133	552	690.0
Lawncrest Rosa Echo, 15021.....	5	365	14,932	402	502.5
L.E.S. Daisy Johanna, 31601.....	6	365	14,569	460	575.0
Rosa Keyes L.E.S., 107864.....	2	365	13,448	456	570.0
L.E.S. Rosa Gretchen, 93223.....	3	365	12,912	478	597.5
Korndyke Evergreen L.E.S., 107865.....	2	305	12,793	421	526.2

## RECORD OF MERIT RECORDS HELD BY FEMALES IN THE HERD IN 1926

Name and number of cow or heifer	Age at commencement of test			Number of days	Pounds of milk	Pounds of butter-fat
	years	months	days			
L.E.S. Daisy Johanna, 31601.....	7	10	27	7	405.9	17.91
L.E.S. Evergreen Johanna, 56199.....	5	1	16	7	509.7	22.17
L.E.S. Evergreen Johanna, 56199.....	5	1	16	14	1,033.1	43.78
L.E.S. Evergreen Johanna, 56199.....	5	1	16	30	2,291.1	90.31
L.E.S. May Echo Mechthilde 70080.....	3	10	27	7	477.4	17.40
L.E.S. May Echo Mechthilde 70080.....	3	10	27	14	983.5	33.61
L.E.S. May Echo Mechthilde 70080.....	5	7	12	7	522.4	16.33
L.E.S. May Echo Mechthilde 70080.....	6	11	15	7	586.2	17.93
L.E.S. May Echo Mechthilde 70080.....	6	11	15	14	1,102.1	35.74
L.E.S. Princess Echo, 91368.....	4	9	21	7	434.1	20.25
L.E.S. Evergreen Gretchen, 75005.....	3	5	0	7	299.2	14.26
L.E.S. Evergreen Gretchen, 75005.....	3	5	0	14	585.4	25.96
L.E.S. Korndyke Rosa Echo, 35780.....	7	3	20	7	500.3	16.53

RECORD OF MERIT RECORDS HELD BY FEMALES IN THE HERD IN 1926—*Concludee*

Age and number of cow or heifer	Age at commencement of test			Number of days	Pounds of milk	Pounds of butter-fat	Pounds of 80% butter
	Years	Months	Days				
Korndyke Rosa Echo,	7	3	20	14	999.2	33.14	41.43
Korndyke Rosa Echo,	7	3	20	30	2,147.1	70.50	88.13
Rosa Gretchen, 93223	4	7	11	7	472.7	21.89	27.37
May Echo Korndyke,	2	11	17	7	396.9	12.223	15.28
Mechthilde Korndyke	4	3	20	7	475.2	18.73	23.42
Nina Mechthilde	4	2	0	7	462.4	17.41	21.77
Keyes L.E.S., 107864..	2	4	22	7	353.3	13.373	16.72
Keyes L.E.S., 107864..	4	0	16	7	372.4	20.94	26.19
dyke Evergreen L.E.S.,	2	10	21	7	411.6	17.37	21.72
dyke Evergreen L.E.S.,	2	10	21	41	833.7	32.85	41.07
dyke Evergreen L.E.S.,	2	10	21	30	1,792.5	66.63	83.30
Gem Korndyke L.E.S.,	3	0	7	7	316.5	15.74	19.68
dyke Gretchen L.E.S.,	2	9	17	7	324.2	13.75	17.20
reen Korndyke L.E.S.,	2	3	23	7	319.9	14.93	18.68
May Echo Gretchen,	2	6	16	7	440.0	13.16	16.46
Nina Alcartra, 91370..	2	6	19	7	387.5	12.83	16.04
Johanna Alcartra, 75037	3	8	10	7	418.3	22.04	27.56
Johanna Alcartra, 75007	3	8	10	14	859.2	40.60	50.75
Echo Lady, 39918.....	8	1	4	7	483.7	20.06	25.08
Echo Lady, 39918.....	8	1	4	14	946.0	36.50	45.63
S. Korndyke Rosa, 34367	8	9	1	7	445.8	17.40	21.76
S. Korndyke Rosa, 34367	9	9	0	7	469.0	19.95	24.94
S. Korndyke Rosa, 34367	9	9	0	14	935.9	38.66	48.33
S. Korndyke Rosa, 34367	9	9	0	30	2,117.8	80.24	100.31
dyke Johanna L.E.S....	2	6	12	7	380.2	13.099	16.37

## SWINE

The swine industry prospered in central Alberta in 1926. Prices were steady and strong and the result was that the demand for breeding stock of dependable breeding exceeded the supply. That the strains of Yorkshires, Tamthys and Berkshires developed by the Station are appreciated by the public indicated by the demand from all parts of the province for breeding stock. This is particularly true of Yorkshires. The Station cannot begin to supply the demand for breeding stock of this breed. The demand for breeding stock of Tamthys is increasing but the demand for Berkshires is gradually decreasing. Apparently the bacon hog educational campaign is influencing public opinion to a considerable extent.

The breeding of the boars in service at the Station will be of interest to many.

Eaton Hall 3-89294-Yorkshire, was bred by the Ontario Agricultural College, Guelph, Ont., and farrowed the property of Eaton Hall Farm, Eversley, Ontario. He is sired by Maple Avenue Duke—59403—, bred by J. Featherston. Son and is out of O.A.C. 3146—79434—. This boar is of exceptionally smooth formation, and has extra length combined with a strong constitution. He sired a particularly smooth lot of pigs at the Station and has left a large percentage of selects when bred to grade sows belonging to farmers of the surrounding district.

Dolphington Major (imp.)—88836—Yorkshire, was bred by A. N. Duden, Dalmeny, Aberdeenshire, Scotland, imported April, 1923, by Director Experimental Farms, Ottawa, Ontario, and was transferred to the Experimental

Station, Lacombe, in August, 1923. This boar is a particularly rugged individual with heavier bone and more hair than is usually found in Canadian Yorkshires. His breeding introduces new blood lines into the herd. This fact combined with his rugged constitution is doubtless responsible for the exceptional vigour of all his progeny. This boar sired the pair of Yorkshire barrows which were first on the rail at the Alberta Bacon Breeders' Competition in 1924.

Ottawa Alexander 148—102754—Yorkshire, bred by Central Experimental Farm, Ottawa, Ontario, and transferred to the Experimental Station, Lacombe, in November, 1924, is a boar of excellent type and breeding. He is sire of Dalmeny A.R.—88840—an imported boar and introduces another strain of imported blood into the herd.

Crocus Hill Prince 8—18753—Tamworth, bred by E. A. Reid, Invermay, Alberta. This boar has excellent type and conformation. His winnings on the 1926 show circuit will indicate to some extent his superior individuality. He was first prize yearling boar at the summer fairs at Brandon, Calgary, Saskatoon and Regina. This boar has been a rather shy breeder but this may be due to the high condition he was in for exhibition purposes.

Rosebud David—19134—Tamworth, bred by B. F. Harris Farms, Invermay, Ill., U.S.A., is a recent acquisition. He is an outstanding boar with a good length, is very smooth, nicely quartered and an exceptionally well-bred hog. His sire Home Farm Duke 15-25522—was Grand Champion at the 1918 Chicago International and his grand sire Knoll David—20624—was Grand Champion at the 1920 Chicago International, and is one of the most famous sires of the breed in America. This boar will introduce new blood lines into the Tamworth herd and it is expected he will do much towards improving the Tamworths of the district.

Sanford Lord—64632—Berkshire, bred by G. L. Smith, Meadowvale, Ontario, is a boar of exceptional bacon type, combined with good Berkshire breed characteristics. He was used for eighteen months in the herd of the Central Experimental Farm, Ottawa, Ont., and was transferred to the Experimental Station, Lacombe, Alberta, in November, 1924. The get of this boar are particularly smooth, have plenty of bone and unusual length.

FARROWING STATEMENT 1926—PROLIFICACY OF DIFFERENT BREEDS OF SWINE

	Spring Litters			Fall Litters			Total of Spring and Fall Litters		
	Yorks.	Berks.	Tams.	Yorks.	Berks.	Tams.	Yorks.	Berks.	Tams.
Number of litters farrowed in 1926	12	5	8	12	2	2	24	7	10
Total number of pigs farrowed	134	48	80	117	16	15	251	64	95
Average number of pigs per litter	11.2	9.6	10.0	9.75	8.0	7.5	10.5	8.8	8.7
Number of pigs dead at birth	18	5	9	9	1	2	27	6	11
Average number of pigs dead at birth per sow	1.5	1.0	1.12	0.75	0.5	1.0	1.12	0.75	1.0
Average number of living pigs farrowed per litter	9.7	8.6	8.9	9.0	7.5	6.5	9.3	8.3	8.4
Number of young pigs died before weaning	4.6	13	17	3	1	1	49	14	18
Average number of young pigs per litter died before weaning	3.8	2.6	2.12	0.25	0.5	0.5	2.02	1.5	1.31
Total number of young pigs raised to weaning	70	30	54	104	15	12	174	45	66
Average number of young pigs raised to weaning per litter	5.8	6.0	6.75	8.66	7.5	6.0	7.23	6.75	6.37
Percentage of total pigs farrowed that were raised	52.2	62.5	67.5	88.8	93.7	80.0	69.3	70.3	69.5
Percentage of live pigs farrowed that were raised	60.3	69.8	76.0	96.3	100.0	92.3	77.7	77.6	78.6

#### PROLIFICACY OF DIFFERENT BREEDS

The farrowing statement shows that 41 litters were raised during the year of which 25 were spring and 16 were fall litters. The litters averaged 10.5 per litter farrowed, of which 8.9 per litter were living, and 6.95 pigs per litter were raised. It should be remembered that this is the average from 41 litters many of which were from gilts and several were under 6 pigs in number.

arrowed. The small number of pigs raised by the Yorkshires in the spring and litters was owing to the much larger number of early January and February litters in which, owing to the weather conditions, the mortality was heavy. Even allowing for this the Yorkshires are first in the totals of both number of pigs farrowed and number raised, with the Berkshires second and the Tamworths a very close third.

#### COMPARISON OF BREEDS AND CROSSES IN FEEDING CHARACTERISTICS

The different lots were weighed into this test during the last week of January and the first of February, and were selected from fall litters of the different breeds and crosses. There was some variation in the age of the respective lots which was unavoidable. However, the general thrift and vigour was as uniform as possible. There was much similarity in the breeding. The purebred Yorkshire lot was selected from two litters by the same sire, and part of the same York-Tam cross-bred lot was also by this sire. The pure-bred Tamworth lot was selected from three litters all by the same sire and the Tam-Berk cross-bred lot, selected from two litters, was by this same sire. The pure-bred Berkshires, sire lot were all by the same sire.

The "date test finished" was the date the last hog of the respective lots was marketed. It will be noted that there is a variation in the "number of days on test" between lots beginning and finishing on the same dates. This variation is accounted for by the fact that some lots were all marketed on June 1 and a few head were taken from each of the other lots. The final marketing was on July 20. In the lots where the pigs were marketed at different times, the "number of days on test" was computed by first reducing the feeding period to a basis of one hog or total feeding days for one hog and this result was in turn converted to terms of nine or ten hogs, as the case may be. One pig was lost from the pure-bred Berkshire lot on March 15, and one from the Tam-Berk cross-bred lot on April 15.

All lots were fed in the open with well banked portable cabins for shelter. The meal portion of the ration was fed dry on a feeding platform, and the drink was fed in troughs. The lots were fed and watered twice daily. All lots were fed a cheap mineral mixture daily consisting of soft coal 180 pounds, calcium phosphate 8 pounds, salt 10 pounds, and sulphur 2 pounds. The results are given in the accompanying table:—

COMPARISON OF BREEDS AND CROSSES

	Pure-bred Yorkshires	Pure-bred Tamworths	Pure-bred Berkshires	York-Tam Cross-breds	Tam-Berk Cross-breds
Date commencement of test.....	Feb. 9	Feb. 11	Jan. 27	Jan. 28	Jan. 29
Date test finished.....	June 1	July 20	July 20	June 1	July 20
Number pigs in lot.....	10	9	9	9	9
Average initial age (days).....	163	152	119	75	105
Average initial weight (lb.).....	97.0	75.8	59.8	86.7	54.4
Average final weight (lb.).....	208.0	171.0	191.3	201.7	195.3
Average gain per head (lb.).....	111.0	95.2	131.5	115.0	140.9
Number days on test (days).....	102.0	123.0	159.0	125.0	150.0
Average daily gain per head (lb.).....	1.09	0.77	0.83	0.92	0.94
Meal required to produce 100 lb. of gain (lb.).....	568.0	835.6	687.5	650.3	606.5
Cost per 100 lb. of gain (\$). ....	6.53	9.54	7.75	7.43	6.87
Percent "selects," when sold.....	70.0	66.6	33.3	11.1	77.8
Amount of feeds consumed by each lot:—					
Oat chop at 34c. per bush..... lb.	2,690.0	2,566.6	2,758.4	2,787.7	2,612.6
Barley chop at 48c. per bush..... lb.	1,797.6	2,534.4	3,123.8	2,024.3	2,887.2
Shorts at \$27 a ton..... lb.	1,267.1	1,422.2	1,582.5	1,356.7	1,530.5
Tankage at \$48 a ton..... lb.	243.7	287.3	294.2	259.4	264.3
Bran at \$25 a ton..... lb.	195.8	266.0	329.7	204.4	309.4
Middlings at \$32 a ton..... lb.	104.8	83.5	92.7	98.3	87.4
Totals.....	6,299.0	7,160.0	8,136.3	6,730.8	7,691.4

It will be noted from the table that the pure-bred Yorkshires made the highest daily gains and the most economical gains while the pure-bred Tamworths made the lowest daily gains and the most expensive gains. The highest percentage of selects was found in the Tam-Berk cross-bred lot with the Yorkshires and Tamworths following closely in the order named. All lots were shipped to the Swift Canadian Co., Edmonton, where they were officially graded on hoof and also graded and examined for softness on the rail. Possibly some variation in the percentage of "selects" was due to the fact that in order to make up a carload shipment it was necessary to hold some hogs until they were "heavy" while on the other hand a few head of underfinished hogs were included which had they been properly finished would have graded "select." The point applies particularly to the York-Tam cross-breds and all lots were affected to a certain degree on both points.

#### INSPECTION FOR SOFTNESS IN CARCASS

All hogs in these lots were inspected for softness on the rail at different periods approximately twelve, twenty-four, thirty-six, and forty-two hours before slaughtering. A summary of the degrees of softness is as follows:—

Breed or cross	Number head very soft or slightly soft	Number head barely firm or very firm
Yorkshire.....	1	6
Tamworth.....	1	7
Berkshires.....		9
York-Tam.....	3	6
Berk-Tam.....	2	7
Totals.....	7	35

In practically every case where carcasses remained very soft or slightly soft up to the 42-hour period, they were unfinished hogs. Of those listed under the firm grades a few were in the soft grades at the first examination but became firmer in the cooler. The temperature of the cooling rooms ranged around 45 degrees.

#### EFFECT OF OAT HULLS ON THE GROWTH OF PIGS

The object of this test is to determine the effect of oat hulls as compared with in oat chop on the growth of pigs. Both lots were uniform as to age, breed, and weight and were fed the same except that the hulls were removed from the oat chop for lot 2. The test commenced on March 25 and on the 1st of April one-third barley was added to the ration which was later increased to equal parts barley and oats. Complete data are given in the table relating to this experiment:—

#### EFFECT OF OAT HULLS ON THE GROWTH OF PIGS

	Lot 1	Lot 2
Date test commenced.....	Mar. 25, 1926	Mar. 25, 1926
Date test finished.....	July 20, 1926	July 20, 1926
Number pigs in lot.....	7	7
Average initial age..... days	82	82
Average initial weight..... lb.	49.4	49.0
Total initial weight for lot..... lb.	345.8	343.0
Average final weight..... lb.	179.0	183.4
Total final weight for lot..... lb.	1,253.0	1,283.8
Average gain per head..... lb.	129.6	134.4
Number days on test.....	118.0	118.0
Average daily gain per head.....	1.10	1.14
Meal required to produce 100 lb. of gain.....	605.6	486.5
Cost per 100 lb. of gain.....	6.06	5.82
Amounts and prices of feeds consumed, oat chop at 34 cents per bushel lb.	4,368.9	
Oat chop (hulls removed) 1½ cent per lb..... lb.		3,585.0
Barley chop at 48 cents per bushel..... lb.	1,115.1	982.0
Shorts at \$27 per ton..... lb.	10.0	10.0



Two head were slaughtered out of the "oat chop group" and both were slightly soft when inspected on the rail. Five head from the other group were slaughtered, three were barely firm or firm and the remaining two were "very firm." The difference in the firmness was probably to some extent due to difference in finish.

It will be noted that the results were decidedly in favour of the lot receiving chop with hulls removed.

#### COMMON BARLEY CHOP VERSUS HULLESS BARLEY CHOP

The object of this experiment is to determine if hulless barley will produce more economical gains than common barley. Two lots of 5 hogs each were on test from November 23, 1925, to January 5, 1926. They averaged  $4\frac{1}{2}$  months of age and 100 pounds in weight. The ration fed the one lot of pigs consisted of 20 per cent oat chop and 80 per cent barley chop; the other lot received a ration of 20 per cent oat chop and 80 per cent hulless barley chop. The percentage of oat chop was gradually reduced until they were receiving 100 per cent hulless barley chop. They were hand fed dry twice a day in dry lots. As the hogs were on test for 43 days only it was considered inadvisable to publish the complete data of the experiment. Both lots made similar rates of gains; although the lot receiving the hulless barley meal required less meal for 100 pounds of gain. The hulless barley when first fed acted as a moderate laxative which was corrected by increasing the amount of oat chop. This condition lasted for four days only or until the pigs became accustomed to the feed. From the results of this experiment it would seem that hulless barley chop may have some advantage over common barley chop.

#### MINERAL SUPPLEMENTS IN INSIDE VS. OUTSIDE FEEDING OF HOGS

The feeding of minerals to all classes of live stock has been given a good deal of attention by those engaged in experimental feeding, and farming. The question of housing in relation to the efficiency of outside versus inside feeding in winter has also claimed a lot of attention. These two phases of the winter feeding of hogs are combined in this experiment, the object being to determine the relative value of mineral supplements in the ration of hogs fed inside versus hogs fed outside. Six lots of hogs were selected for uniformity and were fed identical meal rations. The lots fed inside were housed in the main piggery while those fed outside were sheltered by small portable cabins. The test was started on December 1, 1925, and completed on March 12, 1926.

The minerals fed the different lots were as follows:—

MINERAL MIXTURES FED

	Coal	Salt	Sulphur	Calcium phosphate	Calcium carbonate
	lb.	lb.	lb.	lb.	lb.
t No. 1.....	No minerals.....				
t No. 2.....	180	10	2	8	
t No. 3.....	No minerals.....				
t No. 4.....	180	10	2	8	
t No. 5.....	180	10	2	8	8
t No. 6.....	180	10	2		16

The minerals were mixed with the meal ration which was hand-fed, p dry state. The mineral mixtures were fed at the rate of 5 pounds per week (at one feeding).

Each lot of hogs consisted of two pure-bred Yorkshires, one pure Tamworth, one pure-bred Berkshire and one Berkshire-Tamworth cross. All hogs were officially graded on the hoof, and inspected for softness of on the rail at the packing plant.

Prices of minerals used were as follows:—

Coal, per ton.....	\$ 5 00
Salt, per ton.....	36 00
Sulphur, per pound.....	0 03
Glauber's salts, per pound.....	0 08
Calcium phosphate (bone meal), per ton.....	50 00
Calcium carbonate (lime), per cwt.....	2 50

MINERAL SUPPLEMENTS IN INSIDE VERSUS OUTSIDE FEEDING OF HOGS

	Lot 1 Inside without minerals	Lot 2 Inside with minerals	Lot 3 Outside without minerals	Lot 4 Outside calcium phosphate	Lot 5 Outside calcium carbonate and calcium phosphate
Date test commenced.....	Dec. 1	Dec. 1	Dec. 1	Dec. 1	Dec. 1
Date test finished.....	Mar. 12	Mar. 12	Mar. 12	Mar. 12	Mar. 12
Number hogs in lot.....	5	5	5	5	5
Average initial age.....days	128	127	130	137	134
Average initial weight.....lb.	83.8	83.4	83.6	83.2	84.8
Average final weight....."	198.2	192.4	183.2	185.2	183.4
Average gain per head....."	114.4	109.0	99.6	102.0	98.6
Days on test.....days	100	100	100	98	95.0
Average daily gain per head.....lb.	1.14	1.09	0.99	1.04	1.04
Meal required to produce 100 pounds of gain....."	585.3	588.7	720.1	686.6	726.0
Cost of minerals per 100 pounds gain \$	.....	0.23	.....	0.24	0.32
Cost per 100 pounds of gain.....\$	6.17	6.45	7.59	7.46	7.99
Profit (+) or loss (—) as result of feed- ing minerals.....\$	.....	—0.28	.....	+0.13	—0.40
Number graded "select" when slaugh- tered.....	1	.....	*	*1	** —
Grading on rail as to firmness—					
Number graded "very firm".....	1	2	.....	1	2
Number graded "firm".....	.....	1	1	1	1
Number graded "barely firm".....	2	1	1	.....	.....
Number graded "slightly soft".....	2	1	2	2	.....
Amounts and price of feeds consumed—					
Oat chop at 1c. per pound.....lb.	1,204.6	1,185.8	1,268.6	1,277.5	1,273.2
Barley chop at 1c. per pound....."	1,802.6	1,686.6	1,934.4	1,861.7	1,933.6
Shorts at \$27 per ton....."	249.6	247.0	279.0	267.5	272.6
Bran at \$25 per ton....."	27.6	26.3	45.0	38.15	26.8
Tankage at \$48 per ton....."	63.6	62.8	59.0	56.65	73.05

NOTE.—\*Only four hogs from these lots were slaughtered. \*\*Only three hogs from this group were slaughtered.

An experiment similar to the foregoing one was started on March 1926, and completed on July 20, 1926. Six lots of five hogs were selected from late fall litters. Two lots were fed inside the main piggery, one with minerals and the other with minerals. Four other lots were fed outside in open corrals with well banked portable cabins for shelter. One outside lot did not receive minerals, while the second lot received the same mineral mixture as the inside mineral lot; the third outside lot received a mixture minus calcium carbonate and the fourth received a mixture minus calcium phosph

pasture was available to outside lots. The mineral mixtures used were as follows:—

	Coal	Sulphur	Glauber's salts	Calcium phosphate	Calcium carbonate	Salt
	lb.	lb.	lb.	lb.	lb.	lb.
1.....	75	1	2	.....	2	20
2 and 3.....	0	0	0	0	0	0
4.....	75	1	2	4	.....	18
5.....	75	1	2	2	2	18
6.....	75	1	2	.....	4	18

The mineral mixture was mixed and fed in the same way as in the preceding experiment. It will be noted that this mineral mixture contains less coal and more salt than the mixture used in the preceding experiment. It also contains Glauber's salts.

#### MINERAL SUPPLEMENTS IN INSIDE VERSUS OUTSIDE FEEDING OF HOGS

	Lot 1 Inside with minerals	Lot 2 Inside without minerals	Lot 3 Outside without minerals	Lot 4 Calcium phosphate	Lot 5 Calcium phosphate and calcium carbonate	Lot 6 Calcium carbonate
Test commenced.....	Mar. 12	Mar. 12	Mar. 12	Mar. 12	Mar. 12	Mar. 12
Test finished.....	July 20	July 20	July 20	July 20	July 20	July 20
Number of pigs in lot.....	5	5	5	5	5	4
Average initial age.....days	106	106	120	120	123	116
Average initial weight.....lb.	62.2	61.8	67.0	67.0	72.2	69.2
Average final weight....."	205.8	216.2	226	203.8	213.2	208.75
Total gain for lot....."	718	772	777	684	706	558
Average gain per head....."	143.6	154.4	155.4	136.8	141.2	111.6
Number days on test.....days	111.0	121.0	131.0	121.0	121.0	131.0
Average daily gain per head.....lb.	1.29	1.28	1.19	1.13	1.17	0.85
Feed required to produce 100 pounds of gain....."	547.4	540.8	623.3	638.3	637.5	672.2
Cost of minerals per 100 pounds gain. \$	0.43	.....	.....	0.46	0.44	0.56
Cost per 100 pounds gain.....\$	6.71	6.19	7.13	7.78	7.74	8.20
Loss as result of feeding minerals.....\$	-0.52	.....	.....	-0.65	-0.61	-1.07
Number graded "select".....	1	2	3	2	3	1
Condition as regards firmness when in- spected in carcass.....	.....	.....	.....	.....	.....	.....
Number graded—	.....	.....	.....	.....	.....	.....
Slightly soft or very soft.....	.....	.....	2	.....	.....	.....
Barely firm, firm or very firm.....	5	5	3	5	5	4
Accounts and cost of feeds consumed by lots:—	lb.	lb.	lb.	lb.	lb.	lb.
Oat chop—34c. per bush.....	1,224.5	1,289.7	1,456.4	1,376.3	1,391.4	1,166.6
Barley chop—48c. per bush.....	1,529.0	1,654.0	1,944.75	1,691.3	1,773.3	1,543.0
Shorts—\$27 per ton.....	747.5	778.8	908.1	824.5	849.1	623.3
Straw—\$25 per ton.....	220.0	233.9	283.2	242.2	250.3	216.6
Manure—\$48 per ton.....	158.9	169.3	195.2	176.3	181.3	156.8
Bedding—\$32 per ton.....	37.3	37.3	42.5	42.5	42.8	34.3
Oil meal—\$48 per ton.....	13.0	12.0	13.3	12.9	12.7	10.2

The barley used in this test had the following analysis—

	per cent
Moisture.....	13.51
Protein.....	11.10
Fat.....	3.75
Carbo-hydrates.....	64.16
Fibre.....	5.01
Ash.....	2.47

In these two experiments the economy of gains is consistently in favor of the hogs fed indoors, and in the first experiment, carried on December to March 12, or during the coldest weather, the results are decidedly in favor of the hogs fed indoors.

The economy of gains in both experiments is also consistently in favor of the hogs not fed minerals. In most experiments, minerals have given satisfactory results and in these two experiments the difference may be due to the following causes: First, the hogs were receiving a wide mixture of feeds, including corn and oilcake meal. This wide mixture quite probably contained the minerals necessary for the growth of the hogs, but to insure the eating of minerals they were fed in the meal ration. It is believed to be wiser to have the mineral mixtures constantly accessible and to leave the amounts consumed to the natural selection of the hogs. The calcium phosphate was supplied in the form of bone meal as the hogs seem to quite prefer the bone meal to pure calcium phosphate. The bone meal is much cheaper and also contains a certain amount of lime.

Observations at the Station indicate that tankage could be used to advantage in hog-feeding to a much greater extent than it is at present. This is particularly the case where only oats and barley are being fed.

## FIELD HUSBANDRY

The results of experiments with cultural methods and farm rotations are reported under this division.

The season of 1926 was most favourable for the development of crops during the harvest season for cereals was anything but satisfactory. While the yields were not as high as those produced in 1923, the crop was more profitable in spite of the unfavourable harvest season. The hay yields produced were the heaviest recorded in eight years.

### CROP ROTATIONS

Fifteen rotations are under test at the present time. Accurate production records are kept in these experiments. The actual time required for the different field operations as well as the quantity of seed, twine, etc., is recorded. These, along with land rental and use of machinery, are charged against the crop produced, while the crop produced is valued at the market value with the value of the crop if placed on the market during the regular harvest season.

In computing the cost of production in the rotation experiments, the following values are used.

### COST VALUES

Rent per acre.....	\$ 4 00
Manure per ton.....	1 00
Wheat per bushel.....	1 25
Barley per bushel.....	0 60
Oats per bushel.....	0 50
Fall rye per bushel.....	0 90
Corn per bushel.....	3 00
Potatoes per bushel.....	1 00
Mangolds per pound (seed).....	0 70
Sunflowers per hundred pound.....	13 00
Timothy per hundred pound.....	18 00
Sweet clover per hundred pound.....	13 00
Alfalfa per hundred pound.....	35 00
Alsike per hundred pound.....	20 00
Rye grass per hundred pound.....	13 00
Brome grass per hundred pound.....	13 00
Red clover per hundred pound (Altaswede).....	35 00
Machinery per acre.....	1 35
Tractor per hour.....	0 48
Silo-filling machinery per ton.....	0 25
Kerosene per gallon.....	0 27
Gear oil per gallon.....	1 25
Pasture per month.....	1 50

COST VALUES—*Concluded*

Manual labour per hour.....	0 30
Horse labour per hour.....	0 08
Binder twine per hundred.....	16 00
Threshing per bushel—wheat and rye.....	0 10
barley .....	0 08
oats .....	0 06

## RETURN VALUES

Wheat per bushel.....	1 08
Barley per bushel.....	0 55
Oats per bushel.....	0 40
Winter rye per bushel.....	0 50
Sweet clover per ton.....	10 00
Alfalfa per ton.....	18 00
Mixed hay per ton.....	15 00
Greenfeed per ton.....	8 00
Straw per ton.....	1 00
Ensilage per ton.....	4 00
Potatoes per ton.....	20 00
Pasture per month.....	1 50
Timothy per ton.....	20 00
Roots .....	5 00

All cost of production figures are reduced to the basis of one acre, although the size of the blocks varies from one to forty acres.

**RENT.**—The amount of rent is obtained by charging the value of the land with the current rate of interest as obtained on first mortgages; to this is added the amount of taxes per acre.

**MANURE.**—The charge for manure covers only the cost of applying the manure to the land, and does not include any additional value it may have. The data available at present indicates that it is doubtful if the direct profits from the application of barnyard manure more than compensate for the expense of applying it. The cost of applying the manure is distributed equally to all the crops in the rotation.

**MANUAL LABOUR.**—The rate for manual labour is an average of the prevailing summer wages for hired help in the district. The number of hours charged against a crop includes only that required to complete the work under average farm conditions, and includes all work required in the growing, harvesting and storing of the crop.

**HORSE LABOUR.**—The rate for horse labour includes the cost of feed, the interest on the value of the horse, the depreciation in the value of the horse and harness, as well as the value of the manual labour required to care for the horse.

**MACHINERY.**—The charge for farm machinery was established to cover the interest and depreciation on the machinery used on an average farm. Where a tractor is used, a rate per hour is charged to cover depreciation and interest on investment in tractor used. Where silo-filling machinery is used, the charge per ton for cutting the ensilage is sufficient to cover the rental of the machinery.

**THRESHING.**—The charge per bushel for threshing covers the total cost incurred from stook to granary, and is representative of the price charged on custom work in the district.

**GRASS AND CLOVER SEED.**—The grass and clover seeding, when it does not fail, is distributed equally to each hay and pasture year in the rotation; when it does fail and there is no hay crop, the charge is made against the whole rotation and not against any one crop.

**SUMMER FALLOW.**—The charges against the summer-fallow include rent, machinery and labour. The first crop following summer-fallow is charged with two-thirds of the cost of summer-fallowing while the second crop following summer-fallow is charged with one-third of the cost of summer-fallowing.

**ENSILAGE.**—Ensilage is given a value on the basis of 300 pounds of silage the silo being equal to 100 pounds of hay in the mow or stack.



**Roots.**—Owing to their varying feeding value when fed in different and to different kinds of animals, and arbitrary value is given. This is based on the cost of production and observations during actual feeding.

**MISCELLANEOUS.**—The cost values of seeds, twine, oil, etc., are the values for the year in the district for the class of material used. The values which are used are market prices on November 1.

### ROTATION "O"

First year—Hoed crop, potatoes.

Second year—Wheat.

Third year—Oats.

Fourth year—Summer-fallow.

Fifth year—Wheat, seeded with 10 pounds alfalfa and 10 pounds western rye grass per acre.

Sixth year—Hay, manured 15 tons per acre after harvest.

Seventh year—Pasture, broken early after harvest and cultivated for balance of the season.

#### ROTATION "O"—7 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
		1926	Average 13 years			1926	
1	Hoed crop, potatoes.....	Tons 9.92	Tons 8.99	\$ 198.40	\$ 108.34	\$ 90.06	
2	Wheat.....	bush. 31.5	bush. 34.0	34.02	14.64	19.40	
3	Oats.....	34.75	58.0	17.46	14.06	3.40	
4	Summer-fallow.....				9.53	-9.53	
5	Wheat.....	27.7	26.0	29.92	18.27	11.65	
6	Hay.....	1.05	1.33	15.75	12.60	3.15	
7	Hay.....	1.24	0.94	18.60	13.28	5.32	
	Totals for rotation.....			314.15	190.72	123.45	
	Average per acre.....			44.88	27.25	17.64	

Rotation "O" is a mixed-farming rotation suitable for most districts in central Alberta. One of its strong points is that practically one-third of the land is in wheat following summer-fallow or following a hoed crop, which insures good yields of wheat which help to make this rotation profitable. The years in hay tend to maintain the humus and fibre of the soil, while the application of manure for the hoed crop appears to be improving the general fertility of the soil. The hoed crop and summer-fallow keep the land reasonably clean.

This rotation produced an average profit per acre of \$17.64 in 1926 and an average profit per acre of \$10.27 during the past 13 years. This is the most profitable of the rotations which have been under test for a number of years.

### ROTATION "K"

First year—Hoed crop, corn.

Second year—Wheat.

Third year—Barley, seeded down with 10 pounds alfalfa and 10 pounds western rye per acre.

Fourth year—Hay, manure 15 tons per acre after harvest.

Fifth year—Pasture.

Sixth year—Pasture, broken early in August and cultivated for balance of the season.

## ROTATION "K"—6 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
	1926	Average 13 years			1926	Average 13 years
	tons	tons	\$	\$	\$	\$
Hoed crop, corn.....	11.84 bush.	7.51 bush.	47 36	29 94	17 42	7 67
Wheat.....	44.0	29.24	47 52	17 36	30 16	14 38
Barley.....	19.4 tons	31.59 tons	15 47	13 56	1 91	5 69
Hay.....	1.0	1.30	15 00	11 99	3 01	4 45
Hay.....	1.1	0.97	16 50	12 52	3 98	-1 52
Hay.....	1.2	0.82	18 00	11 95	6 05	-2 33
Totals for rotation.....			159 85	97 32	62 53	28 34
Average per acre.....			26 64	16 22	10 42	4 62

Rotation K is a mixed-farming rotation designed for a district where the precipitation is such that a summer-fallow substitute will give better results in a bare fallow. Wheat might well be substituted for the barley crop, as that has proven to be one of our most satisfactory nurse-crops.

Some farmers might object to one-sixth of their land being in hoed crop. This is not a serious drawback as sunflowers, roots, potatoes or greenfeed might be substituted for the corn, thus a variety of crops that almost any farmer could make profitable use of, and handle without much inconvenience, might be used.

It will be noticed that this is not a very profitable rotation as the average fit per acre for the past 13 years is only \$4.62. It will be seen that the years hay are not profitable over the 13-year period. It would seem that for profitable farming, land should not be left in hay longer than is necessary to establish a sod, and thus maintain the root fibre of the soil. Doubtless one or most two years would be as effective in this respect as three years, while a smaller number of years in hay would tend to make the rotation more profitable.

## ROTATION "C"

First year—Summer-fallow.

Second year—Wheat.

Third year—Wheat.

## ROTATION "C"—3 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
	1926	Average 11 years			1926	Average 12 years
	bush.	bush.	\$	\$	\$	\$
Summer-fallow.....				9 54	-9 54	-8 77
Wheat.....	34.5	30.4	37 26	11 46	25 80	17 19
Wheat.....	26.0	18.1	28 08	11 23	16 85	8 81
Totals for rotation.....			65 34	32 23	33 11	17 23
Average per acre.....			21 78	10 74	11 04	5 74

Rotation "C" is a straight grain-growing rotation. It produced an average profit of \$11.04 per acre during 1926 and an average profit per acre during the last 12 years. It appears to be increasingly difficult to maintain clean land and avoid soil trouble. While the general tilth of the land to be maintained in rotation "O," the opposite is the case with rotation "C." This rotation is not recommended as a permanent rotation for general central Alberta. The land although carefully summer-fallowed every third year shows evidence of becoming depleted in organic matter and contaminated with noxious weeds.

#### ROTATION "LACOMBE"

First year—Hoed crop, sunflowers.

Second year—Wheat, seeded with 10 pounds western rye and 10 pounds sweet clover per acre.

Third year—Hay.

Fourth year—Hay, broken after harvest.

Fifth year—Oat greenfeed, stubble fall-ploughed and rotted manure applied. 10 tons per acre during the winter.

#### ROTATION "LACOMBE"—5 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
		1926	Average 4 years			1926	Average 4 years
		tons	tons	\$	\$	\$	\$
1	Hoed crop (sunflowers).....	20.0 bush.	14.05 bush.	80 00	30 89	49 11	
2	Wheat*.....	39.0 tons	37.4 tons	42 12	16 07	26 05	
3	Hay.....	1.96 tons	1.45 tons	29 40	13 13	16 27	
4	Hay.....	2.08 tons	1.60 tons	31 20	13 43	27 77	
5	Oat greenfeed (for silage)†.....	6.93 tons	6.93 tons	27 72	19 66	8 06	
Totals for rotation.....				210 44	93 18	127 26	
Average per acre.....				42 09	18 64	25 45	

\* Wheat is 3-year average.

† One year only.

This is essentially a live stock rotation, and combines three of the important forage crops used in Central Alberta, with one cash crop. While rotation would not be suitable for a dry district, it might be used to advantage where summer-fallowing is not necessary. It would provide an abundant feed, and one crop to provide ready money.

Rotation "Lacombe" produced an average profit per acre of \$25.45 in 1926, and an average profit per acre of \$12.31 during the last four years. An interesting point in connection with this experiment is that wheat following sunflowers produced an average yield of 37.4 bushels per acre during the three years. The yields of hay following this crop are reasonably satisfactory. This hay crop is rye grass and sweet clover. An interesting point in connection is the fact that the winter of 1925-26 is the first that the field of sweet clover was not completely winter-killed.

#### ROTATION "H"

First year—Wheat, stubble spring-ploughed.

Second year—Oats.

Third year—Summer-fallow.

fourth year—Wheat, seeded with 10 pounds alfalfa and 10 pounds western  
 er acre.  
 fifth year—Hay, 15 tons rotted manue applied in winter and harrowed in  
 spring.  
 sixth year—Hay, broken after harvest.

## ROTATION "H"—6 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of produc- tion 1926	Profit or loss per acre	
	1926	Average 4 years			1926	Average 4 years
	bush.	bush.	\$	\$	\$	\$
Wheat.....	42.0	27.25	45 06	19 35	25 71	10 59
Oats.....	48.3	41.0	23 32	15 05	8 27	3 79
Summer-fallow.....				8 92	-8 92	-10 08
Wheat.....	43.2	31.6	46 60	15 58	31 02	16 74
Hay*.....	1.45	1.5	21 75	13 48	8 27	9 06
Hay*.....	1.9	1.75	28 50	14 73	13 77	11 88
Totals for rotation.....			165 23	87 11	78 12	41 98
Average per acre.....			27 54	14 52	13 02	6 86

two years only.

This rotation has given most satisfactory results at the Dominion Experi-  
 mental Station, Brandon. It is very similar to Rotation "O," which has given  
 lent results at Lacombe.

The strong points of this rotation are that it has two cash crops in wheat  
 one year in oats with a summer-fallow to clean the land. The seeding  
 is done in the wheat crop which follows summer-fallow.

This rotation produced an average profit of \$13.02 per acre in 1926 and an  
 age of \$6.86 per acre during the past four years. This is one of the most  
 actory mixed-farming rotations under test at the Station.

## ROTATION "INTERILLED"—3 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of produc- tion 1926	Profit or loss per acre	
	1926	Average 4 years			1926	Average 4 years
	bush.	bush.	\$	\$	\$	\$
Wheat.....	22.0	22.3	23 70	10 82	12 88	9 39
Wheat.....	18.6	23.0	20 09	11 01	9 08	9 67
Wheat.....	23.4	20.8	25 27	15 54	9 73	6 93
Wheat.....	41.2	22.0	44 50	16 94	27 56	9 30
Wheat.....	44.0	22.4	47 52	22 51	25 01	5 65
Totals for rotation.....			161 08	76 82	84 26	40 94
Average per acre.....			32 22	15 36	16 85	8 19

First year—Wheat.

Second year—Wheat, stubble to be spring ploughed.

Third year—Wheat, half intertilled and half seeded 3 pecks per acre.

This is a three-year grain rotation designed to provide a comparison of Rotation "C" and also compare summer-fallow with grain seeded in rows. When seeded thinly, the object being to ascertain if the summer-fallow is essentially profitable grain production in Central Alberta.

This rotation produced an average profit of \$16.85 per acre in 1926 and an average profit of \$8.19 during the last four years.

When this rotation was started oats were used as the intertilled crop. They were unsatisfactory as a result of the amount of volunteer grain in the wheat the succeeding year. The wheat is not really satisfactory, as the rows make the crop so late maturing that it is usually badly frozen. The wheat following grain in rows is usually irregular in height and maturity. The rotation is not as satisfactory as many of the others under test.

#### ROTATION "SWEET CLOVER"—3 YEARS

First year—Wheat, fall-plough stubble.

Second year—Wheat, half seeded with biennial sweet clover.

Third year—Hay, half seeded with annual sweet clover, stubble ploughed.

#### ROTATION "SWEET CLOVER"—3 YEARS

##### Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit per acre 1926
		1926	Average 4 years			
		bush.	bush.	\$	\$	\$
1	Wheat.....	36.7	30.3	39 64	15 62	24 02
2	Wheat.....	35.0	28.0	37 80	14 06	23 74
		tons	tons			
3 A	Biennial Sweet Clover*	1.18	1.34	11 80	11 07	0 75
3 B	Annual Sweet Clover.....	1.47	1.33	14 70	10 74	3 96
	Totals for rotation.....			103 94	51 49	52 47
	Average per acre.....			25 99	12 87	13 12

\*2 years only.

This rotation is being recommended by the Field Husbandry Department of the University of Saskatchewan for use in Saskatchewan. It is similar to rotation "C" except that sweet clover takes the place of the summer-fallow. It also provides a comparison between annual sweet clover and biennial sweet clover when grown under field conditions.

It has proven one of the most profitable rotations during the period it has been under test. It produced a profit of \$13.12 per acre in 1926 and an average profit of \$9.48 per acre during the past four years. Its chief weakness is the difficulty in getting a stand of sweet clover to winter without killing. The winter of 1925-26 being the first that the field crop of sweet clover has not been killed. Where the biennial sweet clover winter-killed, the rotation was maintained by reseeding the land with the annual. The annual does not seem to have met with popular favour among agriculturists and has gone out of the trade. The results to date indicate that this rotation is very promising. Whether it will come into general use or not will depend on the ability of agronomists to develop strains of winter-hardy sweet clover.

#### ROTATION "MANITOBA"

First year—Wheat.

Second year—Wheat stubbled in.



Third year—Oats, on spring ploughing.

Fourth year—Summer-fallow.

### ROTATION "MANITOBA"

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
	1926	Average 4 years			1926	Average 4 years
	bush.	bush.	\$	\$	\$	\$
Wheat.....	41.7	33.25	45 04	14 02	31 02	20 84
Wheat.....	31.7	25.75	34 24	12 87	21 37	12 63
Oats.....	34.0	45.6	16 40	11 19	5 21	5 46
Summer-fallow.....				8 97	-8 97	-9 33
Totals for rotation.....			95 68	47 05	48 63	29 60
Average per acre.....			23 92	11 76	12 16	7 40

This rotation has been used extensively by a large percentage of grain-ers of the West. Neither grass nor manure is used in it. It is similar to ion "C" in many respects, except that the land is summer-fallowed once in years instead of once in three years.

Rotation "Manitoba" produced an average profit per acre of \$12.16 in 1926 an average profit per acre of \$7.40 during the past four years. Judging from data gleaned from other rotations it would seem that this rotation would be factory in a district with seasonable rainfall while the land is comparatively but would not be satisfactory in districts where the rainfall is limited, or on worn out land.

### ROTATION "L"

First year—Hay.

Second year—Hay, manured in autumn 12 tons per acre.

Third year—Hay, broken after harvest six inches deep and cultivated for nce of season.

Fourth year—Wheat.

Fifth year—Oats.

Sixth year—Barley, seeded with 4 pounds timothy, 4 pounds alsike, and 4 ds red clover per acre.

### ROTATION "L"—6 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
	1926	Average 4 years			1926	Average 4 years
	tons	tons	\$	\$	\$	\$
Hay.....	0.97	0.9	14 55	11 14	3 41	2 52
Hay.....	1.14	1.15	17 10	11 51	5 59	6 06
Hay.....	1.05	1.0	15 75	10 67	5 08	3 95
Wheat.....	bush. 34.3	bush. 29.0	37 04	18 59	18 45	12 67
Oats.....	50.7	44.6	24 48	14 34	10 14	5 48
Barley.....	12.7	21.8	8 69	12 64	-3 95	-1 58
Totals for rotation.....			117 61	78 89	38 72	29 10
Average per acre.....			19 60	13 15	6 45	4 85

This rotation was the original main farm rotation which used approximately 240 acres. More land was used in this rotation than the data from it hence sections of it were subdivided and used for the newer rotations since 1923. The three large fields nearest the buildings were left untouched, and constitute the "Live Stock" rotation.

This is a mixed-farming rotation designed for districts where following results in too heavy a growth of straw. While it has proven a good rotation in wet years, it was unsatisfactory in the dry years 1920-1922.

Rotation "L" produced an average yield per acre of \$6.45 in 1926 and an average yield per acre of \$4.85 during the last four years. It is one of the most profitable of the different rotations under test at this Station.

#### ROTATION "FALL RYE"

First year—Wheat, 15 tons rotted manure applied during the winter and ploughed under in spring.

Second year—Oats for silage, fall rye on disked oat stubble.

Third year—Fall rye.

Fourth year—Summer-fallow.

#### ROTATION "FALL RYE"—4 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit per acre
		1926	Average 4 years			1926
1	Wheat.....	bush. 37.3 tons	bush. 35.7 tons	\$ 40 28	\$ 14 02	\$ 26 26
2	Oats for silage.....	7.97 bush.	4.8 bush.	31 88	20 74	11 14
3	Winter rye*.....	41.0	36.8	20 50	17 83	2 67
4	Summer-fallow.....				9 38	-9 38
	Totals for rotation.....			92 66	61 97	30 69
	Average per acre.....			23 17	15 49	7 67

\*Two years only.

This rotation is designed to furnish additional information concerning economic possibilities of winter rye. At present there is little authentic information as to the profits which might be derived from this crop. The rotation is a use of a practice unfamiliar to many farmers, that of seeding the winter rye on disked oat stubble after the oats have been removed for silage. Using oats for silage permits the land being prepared early enough in the season for the rye being seeded during the latter part of August or early in September, the most satisfactory season for seeding winter rye. The wheat in this rotation produced the heaviest yields recorded at this Station during the past four years. In addition to this, the summer-fallow completely eradicated the winter rye. There was no volunteer winter rye among the wheat.

#### ROTATION "LIVE STOCK"

First year—Silage crops and roots, manured 15 tons green manure in the preceding winter.

Second year—Oat greenfeed, seeded with 10 pounds sweet clover and 10 pounds western rye per acre.

Third year—Pasture, spring seed  $1\frac{1}{2}$  bushels oats and  $\frac{1}{2}$  bushel winter rye acre, should grass winter-kill or fail to catch.

#### ROTATION "LIVE STOCK"—3 YEARS

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
	1926	Average 4 years			1926	Average 4 years
	tons	tons	\$	\$	\$	\$
Hoed crop sunflowers.....	20.0	15.2	80 00	32 66	47 34	30 40
Hoed crop corn.....	8.6	8.9	34 40	28 34	6 06	1 28
Hoed crop mangels.....	failure	3.8		3 87	-3 87	-8 23
	bush.	bush.				
Oats.....	44.8	55.0	21 52	16 07	5 45	5 26
Pasture.....			7 50	11 60	-4 10	-6 30
Totals for rotation.....			143 42	92 54	50 88	22 41
Average per acre.....			28 68	18 51	10 18	4 48

This rotation is designed to furnish information concerning the possibility of making money from land where so much live stock is kept that only the hedges are produced, the concentrates of necessity being obtained from other sources; a condition which might obtain on large pure-bred live stock breeding establishments or on dairy farms near large cities.

This rotation produced an average profit per acre of \$10.18 in 1926 and average profit per acre of \$4.48 during the last four years. This rotation not recommended for general farming in Alberta.

#### ROTATION "BROME"

Brome grass is grown continuously in this rotation.

#### ROTATION "BROME"—CONTINUOUSLY

Summary of Yields, Value and Profit and Loss (per acre)

Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre	
	1926	Average 3 years			1926	Average 3 years
	tons	tons	\$	\$	\$	\$
Brome.....	1.18	1.4	17 70	8 19	9 51	10 25

Rotation "Brome" is designed to furnish information as to the returns one might expect from a hay farm when seeded to brome. It also furnishes information as to the yields produced by this crop and the number of years it can be profitably left without renewing.

This rotation produced an average profit per acre of \$9.51 in 1926 and an average profit of \$10.25 per acre during the past three years. As the land was tiring sod-bound the field was broken and worked down when the hay crop

was removed this season. It will be interesting to note the effect of this treatment on the yield. The brome grass made a quick recovery after plowing and went into the winter with a medium stand of strong vigorous plants.

### ROTATION "ALFALFA"

Alfalfa is grown continuously in this rotation.

### ROTATION "ALFALFA"

Summary of Yields, Value and Profit and Loss (per acre)

Rotation year	Crop	Yield per acre		Value of crop 1926	Cost of production 1926	Profit or loss per acre
		1926	Average 4 years			1926
		tons	tons	\$	\$	\$
1	Alfalfa.....	1.35	1.69	23 30	9 14	14 16
	Totals for rotation.....			23 30	9 14	14 16
	Average per acre.....			23 30	9 14	14 16

This rotation is designed to ascertain the profits which might be obtained from growing alfalfa exclusively. It will also furnish some valuable information as to the yields produced by this crop, and the number of years profitably be left without renewing.

Rotation "Alfalfa" produced an average profit per acre of \$14.16 in 1926 and an average profit per acre of \$12.55 during the past four years. It is the most profitable rotation under test for the past four years and indicates that alfalfa might be grown with good financial returns in central Alberta. In four years this stand of alfalfa is still good although a little grass is creeping in. The reason the yield of 1926 is below the average is that only one crop was possible, rainy weather in September prevented any of the heavy growth being harvested.

## CULTURAL EXPERIMENTS

The present cultural experiments were inaugurated in 1922. They consist of eleven separate projects and utilize 471 plots. As the year 1922 was utilized in establishing the rotations of the different experiments, no data are available from that season's work.

The results obtained in the different experiments indicate that moisture exerts a major influence on crop production. Fertility, which is so important in many farming districts of Canada, is of secondary importance in central Alberta.

### SUMMER-FALLOW TREATMENT

The object of this experiment is to obtain data concerning the most satisfactory method of handling the summer-fallow. A three-year rotation, summer-fallow, wheat and oats, is followed. Uniform treatment is given the oats while the summer-fallow treatment varies as indicated in the table relating to this experiment.

## SUMMER-FALLOW TREATMENT FOR WHEAT

Plot No.	Plot Treatment	Yield per acre, Bushels	
		Yield, 1926	Average yield 4 years
1	Plough 6 inches deep June 15, cultivate as necessary.....	29.6	24.1
2	Plough 6 inches deep May 15, cultivate as necessary.....	27.5	24.5
3	Plough 6 inches deep June 15, cultivate as necessary.....	27.1	22.7
4	Plough 6 inches deep July 15, cultivate as necessary.....	29.2	29.4
5	Plough 6 inches deep June 15, and September 15, cultivate as necessary	28.7	27.6
6	Fall-cultivate after harvest and plough 6 inches deep June 15; cultivate as necessary.....	30.0	29.6
7	Plough 6 inches deep June 15; cultivate as necessary.....	28.7	30.8
8	Fall plough 4 inches after harvest and plough 6 inches June 15; cultivate as necessary.....	27.9	31.8
9	Disk after harvest and cultivate throughout summer-fallow year (do not plough).....	24.2	33.6
10	Cultivate throughout summer-fallow year. Cultivation is first deep with narrow points and then with wide points. (This plot is not ploughed at any time during the rotation).....	29.2	34.7
11	Plough 6 inches deep June 15; cultivate as necessary.....	34.2	37.6

The data presented in this experiment indicate that the method of summer-fallowing exerts little influence on the yield of wheat. It will be noted in the low-year average yield per acre for the different plots that there is a gradual increase in yield per acre from plot 1 to 11. It is the opinion of the writer that this difference in yield may be attributed to soil differences rather than cultural practices. The check plots 1, 3, 7 and 11, bear out this observation.

It would seem that any method of summer-fallowing which keeps the soil from becoming thickly grown with weeds, incidentally conserving the moisture, will result in satisfactory yields per acre. In this connection the reader's attention is drawn to plots 9 and 10 which are not ploughed during the summer-fallow year, and more particularly to plot 10 which is not ploughed at any time during the rotation. The soil of plot 10 has not been ploughed since the spring of 1921 and still produces yields which compare favourably with the other plots. While the Experimental Station is not recommending that farmers do away with the plough, the four years' results of the above experiment indicate that the cultivator might be used to good advantage where a farmer has more summer-fallow than he can handle in good season with the plough. These results were obtained on sandy loam, and it is believed that they would be more applicable on the lighter soils than on the heavier soils such as clay or mbo.

## STUBBLE TREATMENT

This experiment was started to compare different methods of treating stubble land in preparation for wheat and oats. A four-year rotation—summer-fallow, wheat, wheat and oats—is followed. All summer-fallowed plots are treated uniformly, the treatment of the first year stubble being varied.

## WHEAT STUBBLE TREATMENT IN PREPARATION FOR WHEAT

Plot No.	Plot Treatment	Yield per acre, Bushels	
		Yield, 1926	Average yield 4 years
1	Plough in autumn.....	37.1	37.1
2	Plough in spring.....	32.5	22.1
3	Disk stubble in spring and seed.....	35.0	24.8
4	Plough in autumn.....	37.9	25.3
5	Burn stubble in spring, plough and seed.....	35.8	26.4
6	Burn stubble in spring, disk and seed.....	35.0	20.9
7	Plough in autumn.....	23.8	16.9



## WHEAT STUBBLE TREATMENT IN PREPARATION FOR OATS

8	Plough in autumn.....	55.2
9	Plough in spring.....	51.5
10	Burn stubble in spring, disk and seed.....	41.2
11	Plough in autumn.....	46.3

The seasonal rainfall during 1926 influenced the development of the crops to such an extent that different cultural treatments produced very different results. The four-year average yields indicate a trend toward decreased yields as the plots proceed from No. 1 to 7. It is believed that the moisture content of the soil is responsible for this as there is a slight rise in the land from No. 1 to 7. The lower-lying plots absorb more moisture from the spring rains.

The autumn-ploughed plots are checks. Using these for comparison, the only outstanding variation in yield is that produced by plot 2 or spring ploughing. It will be noted that results over a period of 4 years are considerably in favour of fall ploughing.

The decreased yields produced as a result of stubbling in the crop are not significant. It should also be noted that, when the check plots are considered, the stubble-burning appears to be an advantage. It is doubtful if the increased yield resulting from this practice compensates for the organic matter lost by the burning.

In summing up the question of stubble treatment in central Alberta, the writer would recommend fall ploughing whenever harvest operations permit. Fall ploughing has been found to produce yields equal if not superior to spring ploughing during most years and has the added advantage of leaving the land ready for the drill in the spring. Stubble should be burned when it is heavy enough to interfere with cultivation, otherwise it is advisable to incorporate it into the soil.

## SUMMER-FALLOW SUBSTITUTES

The object of this experiment is to determine the suitability of the various tilled crops for summer-fallow substitutes. A three-year rotation, summer-fallow or summer-fallow substitutes, wheat, and wheat, is followed in this experiment. The yield of the summer-fallow substitutes as well as the yield of the succeeding wheat crops is presented in tabular form.

YIELD OF SUMMER-FALLOW SUBSTITUTES AND SUCCEEDING WHEAT CROPS

Plot No.	Plot Treatment	Summer-fallow substitute		Wheat, 1st crop		Wheat, 2nd crop
		1926	5-year average	1926	4-year average	1926
1	Summer-fallow.....			35.8	26.0	30.0
2	Corn.....	8.88	11.29	30.4	23.8	22.9
3	Sunflowers.....	9.96	17.38	37.1	27.3	24.6
4	Oat greenfeed.....	5.00	6.03	31.3	24.4	32.9
5	Summer-fallow.....			42.1	25.7	35.4
6	Oats (3 bush. per acre).....	27.2	42.1	30.0	19.5	31.7
7	Oats (1½ bush. per acre).....	28.0	37.8	32.1	19.2	29.6
8	Summer-fallow.....			45.4	27.8	38.3
9	Oats, 2 drills alternating with 36" intertilled space.....	34.8	36.7	39.6	22.4	34.2
10	Oats, 3 drills alternating with 36" intertilled space.....	27.8	47.6	40.8	24.4	37.1
11	Summer-fallow.....			38.3	25.4	41.3
12	Oats, 4 drills alternating with 36" intertilled space.....	44.0	37.4	35.8	22.4	27.9
13	Oats, 5 drills alternating with 36" intertilled space.....	43.8	38.8	35.4	21.1	28.8
14	Summer-fallow.....			41.3	26.5	36.7

It will be noted that the summer-fallow plots have consistently outyielded those which grew summer-fallow substitute crops. It is also interesting to see the effect of the summer-fallow and summer-fallow substitute crops is noted in the second-year wheat following the treatment.

In considering the merits of the different summer-fallow substitute crops, it is surprising to note that, in the average yields produced by the first- and second-year wheats following the summer-fallow treatments, the sunflowers gave the best results. This statement may be somewhat misleading as experiments conducted at other Experimental Stations indicate that sunflowers are not a satisfactory summer-fallow substitute crop. The only explanation the writer can give for this finding is the possibility that seasonable precipitation may affect the yields to a considerable extent. Throughout all the different cultural experiments, seasonal precipitation frequently nullified the effect of different cultural treatments.

That sunflowers are a reasonably good summer-fallow substitute crop for central Alberta is also borne out by our rotation experiments. In rotation with "combed," wheat following sunflowers produced a yield of 38 bushels per acre in 1925 and 39 bushels per acre in 1926.

The practice of growing grain in drills has little to commend it for use in central Alberta. It is possible however that growing oats in single or double rows as a silage crop might have its advantages.

Where oats are grown in rows for grain seeding should be done earlier than for the ordinary oat crop or the grain will not mature. Where the oats do mature, a sufficient percentage of the ripe grain shatters and germinates the following year to lower the succeeding crop of wheat to a feed grade. In addition to this, the crop following grain in rows ripens very unevenly, thus tending to lower the grade. In summing up the question of growing grain in drills as a summer-fallow substitute there are several points which have been outstanding. Where oats are grown in rows as a preparation for wheat, they should be cut and used for fodder. Where grain is grown in double, triple, etc., rows it is impossible to control the weeds which develop between the rows of grain. Growing grain in rows, as compared with the bare fallow, results in decreased yields per acre, and usually a lower grade of wheat.

The reader's attention is drawn to the excellent results produced by oat greenfeed grown in the usual way. Where greenfeed is grown as a cleaning crop, it will clean the land better than a poorly cared for intertilled crop and, with a reasonable amount of precipitation is available, will be followed by reasonably good yields.

#### BARNYARD MANURE FOR WHEAT

This experiment was designed to compare methods and rates of applying fresh and rotted barnyard manure as well as straw for the production of wheat. In a three-year rotation of summer-fallow, wheat, and wheat is followed. The cultural treatments given are listed in the table presenting the data of the experiment.

BARNYARD MANURE FOR WHEAT  
First Year Wheat Following Summer-Fallow

Plot	Plot Treatment	Yield per
		Yield, 1926 bushels
1	Summer-fallow.....	26.5
2	Summer-fallow—top dressed with 10 tons rotted manure before ploughing.....	28.7
3	Summer-fallow.....	28.3
4	Summer-fallow—straw returned to land before ploughing.....	25.8
5	Summer-fallow.....	26.7
6	Summer-fallow.....	35.0
7	Summer-fallow.....	33.3
8	Summer-fallow.....	35.0

SECOND YEAR WHEAT FOLLOWING SUMMER-FALLOW

1	Stubble—no manure, fall ploughed.....	17.9
2	Stubble—no manure, fall ploughed.....	35.4
3	Stubble—top dressed with 10 tons rotted manure and fall plough.....	35.8
4	Stubble—straw returned to plot and fall ploughed.....	34.2
5	Stubble—no manure, fall ploughed.....	20.8
6	Stubble—fall ploughed, wheat top dressed with 10 tons rotted manure when 3" high.....	17.5
7	Stubble—top dressed with 10 tons unrotted manure and fall ploughed.....	29.2
8	Stubble—no manure, fall ploughed.....	26.6

Plot	AVERAGE OF FIRST AND SECOND YEAR WHEATS FOLLOWING SUMMER-FALLOW	Ave yield in bu
1	Check.....	19
2	Treated as outlined.....	22
3	Treated as outlined.....	22
4	Treated as outlined.....	20
5	Check.....	19
6	Treated as outlined.....	22
7	Treated as outlined.....	20
8	Check.....	20

The barnyard manure for wheat experiment has been under test for 10 years, hence the data available indicate the trend of the experiment.

Some of the salient points brought out by the data of this experiment are:

The effect of the manurial treatment is exerted throughout the full rotation and is not limited to the year immediately following the treatment.

Where the full rotation is considered, manurial treatment in any year resulted in an increased yield per acre. When the present stage of fertility of the soil and the price of labour is considered it is questionable if the application of barnyard manure is economically advisable. It is quite possible that as the land becomes more worn out and depleted of its organic matter, the results will be more in favour of the use of fertilizers.

Top-dressing the wheat with manure when the crop is about 3 inches high tends to check the growth of the plants and incidentally lowers the yield of crop treated; on the other hand, this manure, although very dry, when ploughed down in the summer-fallow gives a splendid yield per acre.

The application of barnyard manure or straw in any form is recommended where the cost of application does not make this practice prohibitive. To a large extent the work may be done when teams would otherwise be idle and at very small cost.

#### BARNYARD MANURE FOR SUNFLOWERS

The object of this experiment is to study the effect of different manurial treatments on the yield and maturity of sunflowers. A three-year rotation of sunflowers, wheat, and wheat is followed; the manurial treatment is given the wheat stubble as a preparation for sunflowers.

A few statements relating to the results of this experiment will give the reader information as to the trend of the experiment, the complete data of which are not being published because the results did not appear to be particularly significant.

The manurial treatment did not appear to effect the maturity of the sunflowers to any appreciable extent. As a rule the sunflowers never attained a later maturity than 10 per cent in bloom.

The effect of the manurial treatment is apparent throughout the entire rotation, indicating that the sunflowers do not utilize the full beneficial effect of the manure; or possibly all of the fertilizer constituents of the manure are rendered available to the crops during the first or even the second year succeeding the application.

#### GREEN MANURE CROPS

The object of this experiment is to study the effect of the different green manuring crops on the yield and maturity of oats. A three-year rotation is followed. The first year is outlined in the table presenting the data of the experiment while the second and third year are oats.

#### GREEN MANURE CROPS

Plot No.	Plot Treatment	Yield per acre	
		Yield 1926	Average yield 4 years
		Bushels	Bushels
1	Summer-fallow.....	58.8	60.0
2	Sweet clover ploughed down June 25.....	56.6	56.0
3	Sweet clover sod ploughed July 10.....	41.9	51.1
4	Western rye sod ploughed July 10.....	39.0	60.0
5	Summer-fallow.....	68.3	62.3

It will be noted that there is considerable difference in the yields produced in 1926 as compared with the four-year average. The writer believes that the 1926 results are a truer indication of the value of the different treatments than the four-year average. The four-year average yields are interesting in that they indicate that reasonably good crops can be expected from the treatments under test.

#### DATES OF SEEDING WINTER RYE

The object of this experiment is to ascertain the date of seeding winter rye that will result in the largest yields per acre. A three-year rotation of summer-fallow, fall rye and oats is used. The data is presented in tabular form.

## DATES OF SEEDING WINTER RYE

Plot No.	Date of Seeding	Yield per	
		Yield 1926	Bushels
1	August 15.....	31.5	
2	July 1.....	28.1	
3	July 15.....	35.3	
4	August 1.....	34.4	
5	August 15.....	36.2	
6	September 1.....	37.5	
7	September 15.....	34.8	
8	October 1.....	40.6	
9	August 15.....	31.7	

The growing season of 1925-26 was ideal for winter rye as will be noted from the yields produced in 1926. It will be noted that the heaviest yield produced in 1926 was from a plot seeded on October 1, a date considered late by many farmers. While such late seeding cannot be recommended, the above data go to show that good results can be expected from seeding late as September 15.

The four-year average yields indicate that the most suitable time for winter rye is from the latter part of August until the middle of September. This is later seeding than generally practised but will be found to give good results if the land contains sufficient moisture to cause uniform germination.

Very early seeding results in the development of a very heavy growth, the result that a large amount of winter-killing usually occurs.

## PLACE IN ROTATION TO SEED WINTER RYE

The object of this experiment is to study the effect of seeding winter rye in combination with and following other crops as compared with seeding in the regular way. The data relating to this experiment are presented in the following form.

## PLACE IN ROTATION TO SEED WINTER RYE

Plot	Treatment	First year of rotation, miscellaneous crops		Second year, fall rye
		Yield 1926	Average yield 4 years	Yield, 1926
		bush.	bush.	bush.
1	Summer-fallow, fall rye seeded August 15.....			33.9
2	Wheat, fall rye seeded with wheat in spring.....	22.5	19.1	24.6
3	Wheat, fall rye seeded on disked wheat stubble.....	30.4	25.6	18.8
4	Barley, fall rye seeded with barley in spring.....	11.0	20.0	20.1
5	Summer-fallow, fall rye seeded August 15.....			33.9
6	Barley, fall rye seeded on disked barley stubble.....	19.0	24.1	21.4
7	Barley, fall rye seeded on fall-ploughed barley stubble.....	20.3	29.0	26.3
8	Oats, fall rye seeded with oats in spring.....	14.0	42.2	22.8
9	Summer-fallow, fall rye seeded August 15.....			33.0
10	Oats, fall rye seeded on disked oat stubble.....	31.3	74.1	22.3
11	Oats for green feed seeded June 21, fall rye seeded with the oats.....	2.05	2.48	23.7
12	Sunflowers, fall rye seeded on disked stubble after cutting.....	8.40	21.19	29.9
13	Summer-fallow, fall rye seeded August 15.....			27.7
14	Oat greenfeed, fall rye seeded when oats are about 4 inches high.....	1.12	2.37	24.1
15	Western rye hay, sod ploughed after hay is removed and fall rye seeded.....	0.86	0.57	19.4



The place in rotation to seed winter rye experiment has brought out some interesting points. As the experiment has been under way for the past years the findings should be a fairly safe criterion of what one should expect such treatment.

It will be seen that winter rye acts as a weed, thus reducing the yield, when sown with any of the cereals in the spring. The four-year averages show a reduction of 6.5 bushels of wheat, 4.1 bushels of barley and 31.9 bushels of oats as a result of seeding the fall rye with these crops in the spring. In addition to the fall rye when seeded in this way usually makes such a rank growth that it inter-kills badly during the following winter.

It would seem that our growing season is too short to permit the development of a crop of grain and a crop of fall rye being seeded early enough the next year to allow the winter rye to make sufficient growth to withstand the winter. Barley, because of its early maturity, is the most suitable cereal to precede the stubbling in of winter rye.

Winter rye as a rule does better on disked stubble than on fall-ploughed land. This is particularly true in a dry year when ploughing and working the land appears to dissipate the limited amount of moisture and results in poor germination of the seed. Fall disking the stubble, on the other hand, appears to conserve the moisture and results in a quick uniform germination and a uniform stand, two apparently most important factors in winter rye production.

The experiment suggests that there are many cultural methods which can be followed in the production of winter rye with reasonable assurance of success. The general use of methods outlined in this experiment is not recommended as economically advisable for central Alberta for the reason that treatments which are good preparation for winter rye would also be good preparation for spring wheat, a crop which is usually more profitable. On the other hand, if a grower wishes to raise a certain area of winter rye, the cultural methods followed in plots 1, 6, 10 and 15 are commended. In addition to these cultural treatments, another method followed with good results in our rotation experiments, is worth considering. This method is to seed winter rye following oats cut for silage. Using oats for silage permits the fall rye being seeded in the normal season for growing this crop, as the oats are cut while in the dough stage and removed immediately. This method has given excellent yields under field conditions during the past two years. In fact it is the most promising of the methods tried other than the summer-fallow method.

#### DATES OF SEEDING CORN AND SUNFLOWERS

The object of this experiment is to determine the date on which corn and sunflowers should be planted to obtain the largest tonnage per acre. A three-year rotation of sunflowers or corn, wheat and oats is followed. Commencing in April and May first, six successive seedings are made at one-week intervals. The yields produced by these different seedings are given in the table presenting the results of the experiment.

## DATES OF SEEDING CORN AND SUNFLOWERS

Plot No.	Plot Treatment	Yield per	
		Yield, 1926	At
		tons	fm
1	Corn seeded May 1.....	6.0	
2	Corn seeded May 8.....	5.40	
3	Corn seeded May 15.....	6.48	
4	Corn seeded May 22.....	9.12	
5	Corn seeded May 29.....	7.08	
6	Corn seeded June 5.....	6.96	
1	Sunflowers seeded May 1.....	10.80	
2	Sunflowers seeded May 8.....	9.48	
3	Sunflowers seeded May 15.....	9.60	
4	Sunflowers seeded May 22.....	8.64	
5	Sunflowers seeded May 29.....	7.68	
6	Sunflowers seeded June 5.....	5.64	

May 22 appears to be the optimum date for seeding corn although one earlier or later appears to make little difference. The five-year average per acre indicates that the earlier seedings of sunflowers are most productive.

## THINNING SUNFLOWERS TO DIFFERENT DISTANCES

The object of this experiment is to determine the distance apart in the sunflowers should be thinned to result in optimum yields of the highest value. So far, the data indicate that sunflowers seeded in rows 36 inches and spaced 6 inches apart in the row will produce yields equal to any other method of planting, while the rather thick stand tends to keep the height down, giving a crop more easily handled both in the field and at the cutting-box.

## METHODS OF SEEDING GRASSES AND LEGUMES

The object of this experiment is to determine the method of seeding a mixture of western rye grass and alfalfa that will give most satisfactory results. The results gathered to date indicate that the time of the occurrence of the seasonal precipitation exerts a greater influence on the stand from grass and seedings than any other single factor, i.e., if the land is very dry in the spring and no rainfall during the seeding season, the stands will be thin and uneven. In a season drilling the seed shallow will give better results than broadcasting seed on the surface, while broadcasting the seed on the surface will give better results if the land contains sufficient moisture to germinate the seed. Our experience with the field crops at the Station has been that much better and uniform stands from seeding are obtained where the seed is broadcast and thoroughly packed after seeding. If the land is very loose it is somewhat advisable to pack two or three times, the idea being to firm the soil and bring the moisture to the surface to germinate the seed.

## RATES OF SEEDING GRASSES AND LEGUMES

The object of this experiment is to determine the rate of seeding that will give the most satisfactory returns for the different grasses and clovers commonly grown in this district. A four-year rotation of summer-fallow, clover hay and hay is followed. The yields produced by the different rates of seeding are given in the table presenting the data of the experiment.

## RATES OF SEEDING GRASSES AND LEGUMES

Crop and rate of seeding	Yield per acre	
	Yield, 1926	Average yield two years
	tons	tons
Western rye, 5 lb. per acre.....	1.16	1.07
Western rye, 10 lb. per acre.....	1.38	1.29
Western rye, 15 lb. per acre.....	1.60	1.30
Timothy, 2 lb. per acre.....	1.53	1.43
Timothy, 5 lb. per acre.....	1.18	1.12
Timothy, 10 lb. per acre.....	1.71	1.41
Alfalfa, 5 lb. per acre.....	1.97	1.77
Alfalfa, 10 lb. per acre.....	2.27	1.86
Alfalfa, 15 lb. per acre.....	2.14	1.78
Sweet clover, 5 lb. per acre.....	2.53	1.96
Sweet clover, 10 lb. per acre.....	2.47	1.87
Sweet clover, 15 lb. per acre.....	3.18	2.22
Brome, 5 lb. per acre.....	1.45	1.09
Brome, 10 lb. per acre.....	1.46	1.42
Brome, 15 lb. per acre.....	1.42	1.48

It will be noted that the thinner seeding of western rye grass is not as productive as the seeding of 10 or 15 pounds per acre. The yields however do not give a true representation of the value of the smallest rates of seeding as a percentage of the yield of the 5-pound per acre seeding contained a considerable amount of weeds which developed as a result of the thin stand of grass. The 10-pound rate of seeding appeared to be thick enough to keep the weeds down and, although the hay produced was a little coarser, the weight was almost equal to the heaviest seeding.

The foregoing statements apply to the 2- and 5-pound seedings of timothy. The 10-pound seeding of timothy, however, is much too thick. The heavy seeding produces very fine-stemmed hay which has a tendency to burn badly in dry weather.

The 10-pound rate of seeding of alfalfa appears to be as satisfactory as the heavier seeding and produces a very satisfactory crop. The 5-pound seeding is a little too thin.

The 15-pound rate of seeding sweet clover is recommended. While comparatively few weeds develop with the 10-pound per acre seeding, the hay produced is coarse. It is believed that the finer quality of the hay produced by the heavier seeding justifies the added expense of the heavier seeding. The 5-pounds per acre seeding produces far too many weeds.

In brome grass the 10-pound per acre seeding seems most satisfactory. While the thinner seeding will eventually thicken up, usually considerable weeds develop the first year. On the other hand, the thicker seeding will become sod-bound much more quickly than the thinner seeding.

## BREAKING SOD FROM CULTIVATED GRASSES

The object of this experiment is to gain information concerning the methods followed in breaking sod from cultivated grasses in preparing land for cereals. A five-year rotation of oats, oats, hay seeded without nurse-crop, hay, and hay is followed. The cultural treatment is varied when the sod is broken for oats.

## BREAKING SOD FROM CULTIVATED GRASSES

Plot No.	Plot Treatment of Sod	Yield per acre	
		Yield, 1926	Si in
		bushels	
1	Ploughed 5" deep immediately after crop is removed, worked as required	25.7	
2	Ploughed 5" deep in October.....	38.2	
3	Ploughed 5" deep in spring, disk and seed to oats at once.....	32.4	
4	Ploughed 5" deep immediately after crop is removed, worked as required	38.2	
5	Ploughed 4" deep immediately after crop is removed, disk and backset September 15.....	40.4	
6	Ploughed 5" deep May 15, worked as summer-fallow.....	39.7	
7	Ploughed 5" deep immediately after crop is removed, disk and worked as necessary.....	47.8	
8	Ploughed 5" deep immediately after crop is removed, disk and worked as necessary.....	58.8	
9	Ploughed 5" deep immediately after crop is removed, disk and backset September 15.....	50.0	
10	Ploughed 5" deep immediately after crop is removed, disk and worked as necessary.....	35.3	

Plots 1 to 7 were seeded with a mixture of western rye grass 8 pounds timothy 2 pounds per acre. Plots 8 to 10 were seeded with brome grass rate of 10 pounds per acre.

This experiment has produced results which are contrary to what one expect. For example, plot 2, which is sod-ploughed late in the fall, is as productive as any of the others. It is believed that the occurrence of the seasonal precipitation is largely responsible for this apparent abnormal yield. In the seasonal precipitation appears to be the most influential factor in the experiment.

This point is further exemplified by plot 6 which is treated as a summer fallow throughout the year and still does not produce heavier yields than neighbouring plots ploughed after the hay is removed and treated as a fallow for the balance of the season. The reason for this apparent abnormality is that the summer rains, during the years the experiment has been under way, have usually occurred after hay harvest, hence the later ploughed plots have much moisture stored in them as the plots which were ploughed earlier.

From the results obtained with this experiment one would infer that sod might be ploughed rather late in the season in a wet year and still produce a crop. While in a year with limited precipitation, earlier ploughing is advised.

The experience with the brome plots has been that it is practically impossible to eradicate brome grass in a wet year regardless of the treatment or number of cultivations given. Cultural treatments which will exterminate brome grass in a dry year merely invigorate the grass in a wet season.

## HORTICULTURE

The season of 1923 was very favourable for the growth of all horticultural crops. The low temperatures during September did some damage to vegetables which were unprotected by the soil or other protective covering. Potatoes were a bumper crop, but a considerable portion of them which were near the surface were frozen.

## VEGETABLES

## VARIETY AND STRAIN TESTS WITH ASPARAGUS

Two varieties, Palmetto and Eclipse, have been grown for a number of years with satisfactory results. Two new varieties have been added to the plantation. These are Sutton Giant French and Sutton Perfection.

## VARIETY AND STRAIN TESTS WITH BEANS

Sixteen varieties of beans were tested in 1926. They were sown on May in 30-foot rows. The earliest maturing sorts produced the most satisfactory results.

## VARIETY TESTS WITH BEANS

Variety	Date when ready for use	Weight from 30-foot row		Remarks
		lb.	oz.	
Orange Black Wax, Ottawa 6.....	Aug. 5	31	2	Short, soon go stringy.
Perpiece, Ottawa 1562.....	" 5	27	0	Very fine, long straight, tender green bean.
Winner, Suttons.....	" 18	26	0	Good and tender, runner bean, enormous size.
Bess Artois, Ottawa 9388.....	" 5	25	10	New variety, good this year.
of All, Suttons.....	" 18	25	8	Runner bean, can be grown as a dwarf by pinching back.
and Pod Kidney Wax, Ottawa 2875.....	" 10	25	8	Very good and tender.
ted Lady, Suttons.....	" 18	24	0	Runner bean, very large, can be grown as a dwarf by pinching back.
ingless Green Pod, Ottawa 5.....	" 5	21	3	Short, goes stringy in dry weather.
is White Wax, Ottawa 1636.....	" 10	20	12	Good tender, long yellow bean.
and Pod Kidney Wax, McDonald.....	" 10	19	0	Very good and tender.
ow Eye Yellow Pod.....	" 5	19	0	Small, green and very good.
adian Wonder, Lacombe.....	" 10	18	0	Long and tender, dark green colour.
sfaaction, Suttons.....	" 10	18	0	Broad and long, very vigorous.
less, Suttons.....	" 10	18	0	Very fleshy and stringless.
nell's Kidney Wax.....	" 10	9	8	Poor cropper.
1, White Pole.....	" 18	8	6	Very late, not so good as other runner beans.

## VARIETY AND STRAIN TESTS WITH GARDEN BEETS

Thirteen varieties of garden beets were tested in 1926. They were seeded on May 27 in 30-foot rows spaced 15 inches apart. They were thinned to 3 inches apart in the row. As a result of abundance of moisture, many of the beets grew a large size. The half long beets have been found to be better keepers than globe type. The beets were harvested on September 27.

## VARIETY AND STRAIN TESTS WITH GARDEN BEETS

Variety	Weight from 30-foot row		Remarks
	lb.	oz.	
nder.....	63	0	Good table beet, fine texture.
f Long, McKenzie.....	54	8	Fine keeper, does not go stringy with keeping.
ra Early Egyptian, Madsen.....	53	0	Good shape and quality, early.
roit Dark Red, Ottawa 8935.....	52	0	Deep colour, good grain, small core.
mon Globe, Madsen.....	49	0	Very early, fine flavour, superior quality.
roit Blood Red, Lacombe.....	48	0	Almost globular shaped roots, small top, sweet and tender.
osby Egyptian, H.B.....	45	0	Great improvement on old Egyptian, smooth and more regular in shape.
osby Egyptian, Madsen.....	44	8	Great improvement on old Egyptian, smooth and more regular in shape.
ra Early Egyptian, Moore.....	42	8	Early, good shape and quality.
roit Dark Red, McDonald.....	40	8	Almost globular shaped roots, small top.
ipse.....	38	8	Very early, roots bright glossy red.
roit Dark Red, Vaughan.....	35	8	Deep colour, good grain, small core.
ck Red Ball, Ottawa No. 6—6894.....	27	0	Very deep colour, good for exhibition.



## VARIETY AND STRAIN TESTS WITH CABBAGE

Twenty-eight varieties of cabbage were tested in 1926. They were s cold-frames on May 4, and were transplanted in the open in early June. plant was wrapped with paper when transplanted as a protection against maggots and cutworms. This protection gave very satisfactory results.

## VARIETY TESTS WITH CABBAGE

Variety	Weight of 6 heads without being trimmed	Remarks
	lb. oz.	
Copenhagen Market, Graham.....	108 0	Best cabbage, besides turning in early th are solid and keep well.
Extra Amager Danish Ballhead, Ottawa 8619.....	88 0	Large solid heads, good variety.
Golden Acre, Harris.....	76 0	Very fine, a type of Copenhagen Market and good keeper.
Enkhuizen Glory, L.S.F.....	72 0	Large cabbage with a quantity of outside
Flat Swedish, D. & F.....	72 0	Fine in wet weather, will not stand droug
Kildonan, S. & B.....	72 0	Good variety, solid heads.
Danish Ballhead, Lethbridge.....	72 0	Large solid heads, a little late.
Danish Ballhead, Harris.....	71 8	Good heads, late variety.
Danish Stonehead, Graham.....	70 0	Heads round, good sized, solid and fine
Danish Ballhead, Ottawa 8619.....	68 0	Good keeper, solid heads, has few outer
Danish Ballhead Int., Harris.....	66 0	Short stemmed, good winter keeper.
Early Winnigstadt, S. & B.....	66 0	Conical in shape, very solid and one of winter keepers.
Early Jersey Wakefield, S. & B.....	62 0	Conical in shape, one of the best early va
Paris Market, MacDonald.....	60 0	Conical in shape, large early variety, split weather.
Sutton Earliest, Suttons.....	58 0	Good early variety.
Marble Head Mammoth, Ewing.....	58 0	Splits in wet weather.
Sutton's Favourite, Suttons.....	56 0	Dwarf in habit, solid heart formed early
Northern Favourite, McKenzie.....	52 0	Did not prove very satisfactory.
Early Drumhead, L.S.F.....	52 0	Hearts not solid, large quantity outside
Red Stonehead, Graham.....	33 0	Red variety, good for pickling.

## VARIETY AND STRAIN TESTS WITH GARDEN CARROTS

Fourteen varieties of carrots were tested in 1926. They were seeded ea May in 30-foot rows spaced 15 inches apart; and were later thinned to 2 1/2 apart in the row. The Chantenay, Early Scarlet Horn, Danvers and Nr Half-Long are good standard sorts.

## VARIETY AND STRAIN TESTS WITH GARDEN CARROTS

Variety	Yield from 30-foot rows	Remarks
	lb. oz.	
Chantenay, Ottawa 6049.....	76 0	Good for exhibition purposes, finely grain long.
Chantenay, MacDonald.....	66 8	Good for exhibition purposes, good mat variety tender.
Improved Danvers.....	64 0	Well adapted to all soils, good yielder, tender.
Early Scarlet Horn.....	60 8	One of the Nantes type, more uniform texture.
Danvers.....	57 0	Very good shape, one of the best.
Oxheart.....	56 0	Small early variety, rather rough, incl crack.
St. Valery.....	56 0	Fleshy, good colour, new variety.
Chantenay.....	54 0	Good for exhibition purposes, finely grain long.

VARIETY AND STRAIN TESTS WITH GARDEN CARROTS—*Concluded*

Variety	Yield from 30-foot rows		Remarks
	lb.	oz.	
on Champion Scarlet Horn.....	52	0	The best of all for all-round qualities, fine for exhibition.
tes Half-Long.....	50	0	Good shape, stump rooted, good colour, uniform.
len Ball.....	49	0	For early use only, no good for exhibiting.
Red Intermediate.....	49	0	Clear skin, bright in colour, the flesh close in texture.
tes, Steele, Briggs'.....	46	8	Good shape, stump rooted, very uniform.
ow Intermediate.....	46	0	Perhaps the colour would not appeal to the public being bright yellow, although of good flavour.

## VARIETY AND STRAIN TESTS WITH CAULIFLOWER

The cauliflower seed was sown in cold frames on May 4 and the plants were transplanted into the open in June. Some of the plants were a little late in budding but in all cases the quality was unusually good. Some of the heads weighed as much as 8 pounds. A few of the finer heads were kept until November wrapping the head in paper at harvest.

## VARIETY AND STRAIN TESTS WITH CAULIFLOWERS

Variety	Weight of 6 heads	Remarks
	lb.	
ton Purity.....	42	Fine large heads a little later than Snowball.
ly Snowball.....	41	Early, close white heads, good variety.
ton Universal.....	40	Very fine, well protected with leaves.
ide vari Erfurt.....	36	Early, close white heads.
ton Autumn Giant.....	30	Late variety, poor colour.
ton Early Giant.....	28	This variety did not do very well.

## VARIETY TESTS WITH CELERY

Thirteen varieties of celery were seeded in flats in the greenhouse on March 23. The celery plants were planted on the level in rows 6 feet apart to allow room for earthing up. They were spaced 6 inches apart in the rows. Some of the celery had the heads trimmed, and wrapped in paper before packing in sand. These have kept very well.

## VARIETY TESTS WITH CELERY

Variety	Yield from 15 feet of row	Remarks
	lb.	
Major Clark.....	85	Pink variety; heavy cropper; very fine flavour.
Matton Supperb Pink.....	75	Pink variety; nutty flavour; very crisp.
Golden Plume Pink.....	73	This variety proves one of the best.
Matton Gem.....	70	Good white variety; bleaches well.
Right Giant White.....	50	Rather coarse; does not bleach well.
White Queen.....	45	Very white in colour; good flavour.
Paris Rose Ribbed.....	40	Light rose; showing ribs in stalk.
Golden self Blanching Ott.....	34	Good; bleaches yellow.
Golden self Blanching MacDonald.....	26	Good; bleaches yellow.
Deleriac large rooted.....	24	Not marketable.
Wans Triumph.....	20	Fair variety.
Cardhook.....	13	Medium quality; does not bleach so well.
Giant Pascal.....	12	Fair variety.

### VARIETY AND STRAIN TESTS WITH CORN

Of the fourteen varieties of corn tested, only three varieties mature sufficiently for eating. These were Banting, Sutton Early and Paramount

### VARIETY AND STRAIN TESTS WITH LETTUCE

Twenty varieties of lettuce were tested. They were seeded on April rows 15 inches apart and were thinned to 6 inches apart in the row. S made late in July provided lettuce until November.

### VARIETY AND STRAIN TESTS WITH LETTUCE

Variety	Type	Remarks
Paris White Cos.....	Cos.....	Good variety; very crisp.
Trianon Cos.....	Cos.....	Hard heads and crisp.
Salamander.....	Cabbage.....	Good head lettuce.
Iceberg.....	Cabbage.....	Remains a long time without bolting
Curled Black Seeded Simpson, Ewing.....	Loose leaf.....	Remains good for a long time.
Black Seeded Simpson.....	Loose leaf.....	Remains good for a long time.
Black Seeded Simpson, Vaughan.....	Loose leaf.....	Remains good for a long time.
Black Seeded Simpson, Harris.....	Loose leaf.....	Remains good for a long time.
Extra Curled Black Seeded Simpson, Harris.....	Loose leaf.....	Fine curled; good for garnishing.
Crisp as Ice.....	Cabbage.....	Very solid hearts.
All Seasons.....	Cabbage.....	Turns early to seed.
New York.....	Loose leaf.....	Withers badly in hot weather.
Grand Rapids.....	Loose leaf.....	Early variety, fine for garnishing.
Early Curled Simpson.....	Loose leaf.....	Remains good for a long time.
Improved Hanson.....	Cabbage.....	Good head lettuce.
Big Boston.....	Cabbage.....	One of the best hard heads; very crisp.
Early Paris Market.....	Cabbage.....	Very soft leaves; withers badly.
Tom Thumb.....	Cabbage.....	Very hard crisp heads; stands heat well.
Golden Ball.....	Cabbage.....	Good for early forcing.

### VARIETY AND STRAIN TESTS WITH ONIONS

Fifteen varieties of onions were on test in 1926. Onion maggot did considerable damage with the result that yields were not comparable.

### VARIETY AND STRAIN TESTS WITH PARSNIPS

Two varieties were seeded on April 18 in 30-foot rows, spaced 18 inches apart, and were later thinned to 6 inches apart. They were harvested October 1. Hollow Crown from Graham yielded 48 pounds and Hollow Crown Ottawa yielded 37 pounds.

### VARIETY AND STRAIN TESTS WITH GARDEN PEAS

Twenty varieties of garden peas were sown for this test. A number of varieties were grown from seed produced at this Station.

### VARIETY AND STRAIN TESTS WITH GARDEN PEAS

Variety	When harvested	Weight from 30-foot row	Remarks
		lb. oz.	
Lincoln.....	Aug. 5	25 9	Good cropper; experts claim this to be the best for canning; very
Invermere Seedling No. 6, Lacombe seed.....	" 6	23 0	Large pea; mid season; good crop
Invermere No. 2, Lacombe seed.....	" 6	19 8	Mid season; medium size.
English Wonder.....	" 5	19 0	Extra early; wrinkled variety; good cropper.
Stratagem.....	" 5	18 8	Large pods; well filled; late variety of the finest peas grown.

VARIETY AND STRAIN TESTS WITH GARDEN PEAS—*Concluded*

Variety	When harvested	Weight from 30-foot row		Remarks
		lb.	oz.	
American Wonder, Lacombe seed.....	" 6	18	0	Very early; good cropper; wrinkled variety.
Sur X English Wonder.....	" 6	17	11	Early variety; fair cropper.
Pea V.C., Lacombe seed.....	" 6	16	8	The largest pea in cultivation; fine for exhibition work.
Emer No. 3, Lacombe seed.....	" 6	16	4	Mid season pea; good colour.
.....	" 5	16	0	The largest early pea, being double the size of early varieties; very vigorous.
nas Laxton.....	" 6	15	8	Fine mid-season pea; large long pods well filled.
sh Wonder, Ottawa.....	" 5	15	0	Heavier cropper than American pea; does not get old so quickly.
sh Wonder, Burpee.....	" 5	14	13	Very early; good flavour; pods well filled
Pea V.C., Lacombe seed.....	" 6	14	5	The largest pea in cultivation; fine for exhibition work.
Emer No. 1, Lacombe seed.....	" 6	14	3	Mid-season; wrinkled pea.
of Albany, Lacombe seed.....	" 16	14	0	Pods 4 to 4½ inches long; wrinkled; superb flavour.
hless, Lacombe seed.....	" 6	14	0	Large pod; mid season; slightly curved; fine flavour.
e Marvel.....	" 6	14	0	One of the earliest; dwarf wrinkled peas.
oved Stratagem.....	" 16	13	13	Did not yield so heavy as Stratagem; very fine pea always well filled.
y Morn.....	" 5	13	0	Not so good as some of the early varieties
sh Wonder.....	" 5	12	14	Good early pea; good size pod and well filled.
lus X American Wonder.....	" 5	12	7	Mid season pea; fair variety.
ly Giant, Lacombe seed.....	" 6	11	8	Very large pod; dark green; very good exhibition pea.
elstone.....	" 16	11	10	One of the best late varieties; well filled long pod.
rd, Lacombe seed.....	" 16	11	4	Not so good as some of the large-podded varieties; pods inclined to be short.
merican Wonder.....	" 16	10	1	Very early and prolific; one of the oldest varieties.
rman.....	" 16	8	0	Mid-season; pods broad with blunt ends; peas of high quality.

## POTATOES

The potato yields of 1926 were unusually heavy. The yield of 692 bushels per acre produced by Empire State is the largest ever produced at this Station. In all varieties produced heavy yields, there was considerable difference in quality of the tubers. Some of the round varieties, such as the Gold Nugget, showed a greater tendency to hollowness than the flatter types such as the Gold N.

## POTATO YIELDS AT THE EXPERIMENTAL STATION, LACOMBE

Variety	Yield per acre		Percentage market- able	Remarks
	bush.	lb.		
Empire State.....	692	.....	83.5	The heaviest yielder; oblong shape; white skin but deep eyes; one end very pointed; unsuited to potato trade.
Country Gentleman.....	656	30	84.0	Good shape; pink skin; heavy cropper; good eating potato but unsuitable for market because of pink skin.
Heer Pride.....	638	.....	94.0	White skin; good shape, flat; uniform in size.
Early Norther.....	628	.....	96.0	Pink skin; medium early; good cooker; large but with rather deep eyes.
Alton Rose.....	628	.....	94.5	Dark pink skin; deep eyes; not uniform in shape.
Netted Gem.....	596	.....	85.0	Introduced by Burbank; very fine variety; excellent cooking qualities, netted white skin but rather too late maturing.

POTATO YIELDS AT THE EXPERIMENTAL STATION, LACOMBE—*Continued*

Variety	Yield per acre		Percentage marketable	Remarks
	bush.	lb.		
Everitt.....	592	.....	93.0	Oblong; large; pink skin; not uniform in
Gold Nugget.....	591	.....	76.0	Round; white skin; has a tendency in w to be hollow.
Early Hebron.....	591	.....	92.5	Oblong; pink; pointed one end; deep eye
Gold Coin.....	589	.....	94.0	Flat; uniform in shape; white skin; good good marketable variety and one of suitable for Alberta.
American Wonder.....	583	.....	98.0	White skin; deep eyes; large but not a shape.
Carter Early Favourite..	583	.....	86.5	White; good shape; shallow eyes; small
Wee McGregor.....	583	30	92.0	Oblong; large; white skin; coarser than G
Ashleaf Kidney.....	570	.....	94.5	Not true to type; very early; white ski
Early Bovee.....	545	.....	84.0	Fair size; early; pink skin; good cooker
Extra Early Eureka....	542	.....	65.0	White skin; poor shape; deep eyes; gro shape in wet weather.
Six Weeks.....	542	.....	78.0	Very early; grown for market because of maturing; pink skin; good cooker.
Green Mountain.....	513	.....	95.0	White skin; good shape and uniform; me
Irish Cobbler.....	506	.....	88.0	Perhaps the best eating of all the white but very rough in shape, with very de making it unmarketable.
Early Vermont.....	506	.....	97.0	White skin; deep eyes; not uniform in sh
Table Talk.....	496	.....	90.0	White skin; shallow eyes; not so heavy
Early Ohio.....	490	.....	76.0	The earliest of all varieties; oblong in sh fine cooking qualities; pink colour; un market.
Rural Russet (Invermere)	401	.....	83.0	Rapidly gaining popularity in the pot because of brown skin and good sha yielder during two years on trial at La
Rural Russet (Rickett).	371	.....	86.0	Rapidly gaining popularity in the pot because of brown skin and good sh yielder during two years on trial at L

It will be noted that Empire State produced the heaviest yield in. Unfortunately this variety is not the type demanded by the potato trade.

Other varieties which produced unusually heavy yields are also unsu T

Gold Coin, which is a white variety, is a fair yielder. It is appear most suitable for central Alberta as it meets the market demand. It is mended by the Station for the main crop.

Early Ohio, the earliest maturing variety tested at the Station, is mended for the early market and table use.

Netted Gem, one of the most popular varieties in the trade at the time is too late maturing to be considered safe for this district, except on early land.

Rural Russet, a new sort which is gaining popularity in the seed rather late maturing unless planted on early land. This variety has been for three years and 1926 is the first year it has ever made a normal develop

## VARIETY AND STRAIN TESTS WITH PUMPKINS

Variety	Weight from one hill, 3 plants		Remarks
	lb.		
Sweet Pie, Moore.....	93		Small, sweet and fine grained; best variety for mal
Small Sugar, McDonald.....	85		Fine quality; the skin deep-orange in colour.
Sweet or Sugar, Ottawa 5548....	80		Fine quality; the skin deep-orange in colour.
Connecticut Field.....	75		Very hardy pumpkin; large size; green skin.
King of Mammoth.....	70		Very large; bright yellow colour; flesh of good qu



## VARIETY TESTS WITH SQUASH

Variety	Weight from one hill, 3 plants	Remarks
	lb.	
Long Green.....	160	Ideal type of the long marrow; far superior to most strains offered; dark green in colour; very prolific.
Dainty.....	129	Small to medium size; very prolific; round in shape; striped in colour.
Vegetable Marrow.....	91	The best form of long white marrow; very large size, excellent quality.
Small Marrow.....	81	Small white marrow; very tender; good shape.
and True.....	74	Bush marrow; round; slightly flattened; mottled green skin.
Bush.....	69	Bush marrow; beautiful creamy white; considering size of plant very prolific.
ous.....	68	True to name; very fine flavour; thin rind; oblong; deep green skin.
Long White.....	59	Fine shape; good exhibition variety; stands drought.

## VARIETY AND STRAIN TESTS WITH RADISHES

Thirteen varieties were seeded on April 28. French Breakfast and White keep their good quality longer than most varieties. Radishes should be sown at regular intervals if a continuous supply of radishes of good quality is desired.

## VARIETY AND STRAIN TESTS WITH RHUBARB

Twelve varieties were under test in 1926. The Victoria, Daws Champion, and Early Scarlet proved to be the most satisfactory.

## VARIETY AND STRAIN TESTS WITH TOMATOES

Thirty varieties of tomatoes were tested in 1926. They were sown in the open house on March 25, transplanted into flats and hardened off in shelter. As a result of June frosts they were not planted into the open ground until June. The latter part of August and September were rainy and cold, hence very little fruit ripened, although a good crop of green fruit was produced.

## VARIETY TESTS WITH TOMATOES

Variety	Total weight from 30-foot row		Remarks
	lb.	oz.	
Open Air, Lacombe seed.	68	0	The best early variety; ripening outside every year; heavy yielder.
tsford Argo, Lacombe seed	59	0	A variety of great promise; smooth; early fruit; very prolific.
Early.....	51	2	Smooth fruit; good shape; heavy yield but does not ripen as early as some.
Best, Lacombe seed.....	50	0	One of the best; fine and large; very handsome; good flavour.
ity, Lacombe seed.....	44	0	Fine variety; not so smooth as Bonny Best.
e of Wales, Lacombe seed..	40	0	We have not experimented very long with this variety; good for greenhouse.
artin Vulcan, Lacombe seed	40	0	Good variety; ripening outside every year; smooth; good shape.
ity X Earlibell.....	39	8	Similar to Alacrity; fruit not so smooth as Bonny Best..
ity, Ottawa 6560.....	34	0	Fine variety; not so smooth as Bonny Best.
en Queen, Lacombe seed..	34	0	Yellow variety; good flavour; good cropper; light yellow colour.
of All, Lacombe seed.....	33	0	Good shape and smooth; with selection may grow into a useful variety.
est of All, Lacombe seed...	31	0	Similar to First of All; smooth and good shape.
ank.....	29	8	Not so early as some varieties; fair cropper.
ly Best Super Standard.....	28	0	Not so good as the same variety raised at Lacombe, being 22 pounds less on 30-foot row.
ity X Hipper.....	26	0	Good early variety but light yielder.

VARIETY TESTS WITH TOMATOES—*Concluded*

Variety	Total weight from 30-foot row		Remarks
	lb.	oz.	
Bonny Best, Moore.....	25	0	Fine large; very handsome; good flavour; but the yield of Lacombe-grown seed.
Pink, Ottawa 6560.....	24	8	Like its name, its flesh and skin are pink; very good.
Wayahead, Lacombe seed.....	24	2	Good smooth variety; worth experimenting with heavy 1925.
Bolgiano, Lacombe seed.....	24	8	Good smooth variety; heavy cropper; heaviest 1925.
Perfection.....	24	0	Good variety for greenhouse; smooth; very good.
No. 1 Novato.....	23	8	New variety; fair.
Daniels Open Air.....	23	2	Fruit very small; many varieties much better.
Bonny Best, Stokes.....	22	0	Fine large, handsome fruit; this strain did not set well our Lacombe seed.
Early Jewel.....	21	0	Smooth fruit; did not set well.
No. 5 Geronimo.....	19	3	New variety; smooth; did not set well.
No. 3 Petaluma.....	18	5	New variety; fair; not so smooth as some.
Marglobe.....	14	8	This variety did not do very well this year.
No. 2 Ignacio.....	14	0	New variety; fairly early but did not set well.
Golden Nugget, Lacombe seed..	12	0	Golden yellow variety; good flavour; fruit rather small.
John Baer.....	11	0	Did not set well.

## FLOWERS

The different flowers are divided into classes according to the method followed in the management while the most suitable of each class are mentioned.

## HARDY SELF-SEEDING ANNUALS OR ANNUALS SEEDED IN THE OPEN

The most suitable varieties are as follows: *Bartonia aurea*, *Linaria*, *tuft*, *Pansies*, *Shirley Poppies*, *Double Poppies*, *California Poppy*, *Calendula Officinalis*, *Pot Marigold*, *Baby's Breath*, *Oxalis*, *Princess*, *Chrysanthemum* various varieties, *Corn Flower*, *Coreopsis*, *Godetia*, *Lupinus*, *Night Scented Stock*, *Virginia Stock*, *Clarkia*, *Portulaca*, *Sweet Peas*.

## HALF-HARDY ANNUALS SEEDED IN GREENHOUSE OR COLD-FRAMES AND TRANSPLANTED INTO THE OPEN

The most suitable varieties are as follows: *Asters*, *Antirrhinum*, *Snapdragons*, *Ageratum*, *Carnation*, *Marguerite*, *Coreopsis*, *Cosmea*, *South African*, *Burning Bush*, *Lobelia*, *Marigold*, *Pansy*, *Nemesia*, *Nicotiana*, *Petunia*, *Salpiglossis*, *Schizanthus*, *Statice Everlasting Flower*, *Stocks*, *Tagetes*, *Zinnia*.

## PERENNIALS

Among the most satisfactory sorts are *Lavatera*, *Iris*, *Lilium*, *Lychnis*, *Verbascum*, *Saxifrage*, *Rudbeckia*, *Pyrethrum*, *Gypsophila*, *Echinops*, *Thistle*, *Shasta Daisy*, *Candytuft*, *Arabis*, *Anchusa Italica*, *Aconitum*, *Delphinium*, *Dianthus*, *Hemerocallis*.

## BUSH FRUITS

The past season was very satisfactory for all bush fruits. The yields and quality of fruits produced were above the average.

## VARIETY AND STRAIN TESTS WITH STRAWBERRIES

Variety	Number of pounds from 30-foot row		Remarks
	lb.	oz.	
Senator Dunlap.....	31	0	Good standard variety, firm fruit, good shape and colour, good cropper.
Senator Pride.....	28	0	Medium size fruit, fair cropper, not so good as Senator Dunlap.
Lacombe.....	20	0	Large handsome berry, fine colour, very vigorous in growth, heavy yielder.
Delicious Kellogg.....	19	0	Very fine berry, colour not so good as Lacombe, vigorous grower, also good yielder.
Stevens Late.....	17	0	Ever bearing, small berry but very hardy.
August Luther.....	12	0	Very early, medium size berry, good cropper.
Stevens Late.....	11	0	Fine berry, good colour, fair yielder.
Stevens Late.....	11	0	Very useful, comes into bearing after other varieties, large fruit but colour not so good as could be desired.
Tennessee Prolific.....	6	0	Fine berry, good colour, not so prolific as name suggests.
Senator.....	6	0	We have not many plants of this variety, large berry, very promising, good colour.
Senator Wood.....	5	0	Only fair variety, medium size berry, many varieties better.

The Senator Dunlap, Stevens Late, August Luther and Delicious Kellogg, are all excellent varieties. Some of the later sorts have reduced yields as a result of hot dry weather during the fruiting season.

Lacombe is a selection made by this Station from a large number of seedlings. It is a very vigorous grower, and has a large, fine coloured fruit which maintains its shape when preserved.

## VARIETY AND STRAIN TESTS WITH RASPBERRIES

Eight varieties of raspberries are compared. The yields were influenced to some extent by June frosts which did some damage to the bloom, while dry weather during the fruiting season tended to reduce the yield. Herbert, Cuthbert and Shaffer Colossal (blue) are recommended for general use.

## VARIETY AND STRAIN TESTS WITH RASPBERRIES

Variety	Yield from 30-foot rows		Remarks
	lb.	oz.	
Herbert.....	28	13	Perhaps the best all-round variety, good cropper, large juicy fruit, good colour, fine flavour.
Shaffer Colossal.....	17	4	Very bright colour, fine flavour, but berry drops off too easily.
Shaffer Colossal.....	17	4	Not recommended, good yielder but poor colour and hard berry.
Shaffer Colossal.....	16	0	Fine large berry, not so prolific as Herbert, good flavour.
Shaffer Colossal.....	15	5	The earliest variety, good colour, fine flavour.
Shaffer Colossal.....	13	0	Dark berry, late variety, large, not prolific.
Shaffer Colossal.....	12	10	The largest berry, fine flavour, very juicy.
Shaffer Colossal.....	12	6	Very useful, the latest of all the berries, very sweet, medium size, purple colour, very firm.

## VARIETY TESTS WITH BLACK CURRANTS

Variety	
Kerry.....	
Eagle.....	
Climax.....	
Ogden.....	
Merveille de la Gironde.....	
Lee Prolific.....	
Collins.....	
Topsy.....	
Magnus.....	
Beauty.....	
Eclipse.....	
Bang Up.....	
Clipper.....	
Saunders.....	
Monarch.....	
Black Naples.....	

Black currants were very fine fruit, large and good flavour. Kerry the heaviest producing was originated at the Central Experimental Farm, Ontario.

## VARIETY TESTS WITH RED CURRANTS

Variety	
Pomona.....	
Raby Castle.....	
Greenfield.....	
Red Dutch.....	
Holland.....	
Red Grape.....	

Any of the varieties of red currants will give satisfactory results.

The crop of gooseberries was very light on account of frost during blooming season.

## CEREALS

The season of 1926 will be remembered as one of the worst years in history from the experimentalists' standpoint. The crop was seeded under ideal conditions with just sufficient moisture to develop normal growth. Stormy weather began when early maturing sorts were in the early dough stage and continued with rain and snow until the latter part of September. This weather made it practically impossible to harvest the cereals or gather data on the comparative maturity of the different varieties.

## SUMMARY OF ACTIVITIES IN CEREAL WORK

Nature of Work	Number of Varieties or Strains Included						
	Wheat	Oats	Barley	Peas	Winter Wheat	Winter Rye	Flax
Selections grown in head rows.....	500	565	229				
Increase plots of 1925 pure line selections.....	252	241	227	50			
Variety test plots (1/40 acre).....	22	18	18		5	2	3
Variety test plots (Rod row plots).....	61	33	27	18			
Nursery plots of new introductions.....	24	33	10	51			
Varieties increased for distribution.....	2	1	1				

The table giving a summary of the cereal activities at this Station will give reader some idea of the scope of the work under way. The Station at present over 400 pure line selections of Marquis and 200 of Garnet. Large numbers selections of one variety are carried for the purpose of isolating types which are in any degree from the parent variety, the object being to eliminate these from the parent variety so that the strains, when bulked and used as foundation stock for pure seed, will not exhibit off-type plants so frequently seen in fields of seed grain. As these off-type plants might be the result of either mechanical mixing or natural crossing, these selections are grown as pure lines two generations or seasons, so that strains which exhibit diversity of type, resulting from natural crossing, can be detected.



Elite seed of Banner Ottawa 49 oats. Note length and strength of straw and apparent productiveness.

The technique outlined in the foregoing paragraph give an excellent opportunity for the isolation and development of selections which suggest the possibility of being superior to any of the standard varieties in the seed trade at the present time. The principal object of this work, however, is the production of seed grain of undisputable pureness as to variety type.

The results of the rod-row variety tests with cereals is not included in this report. While this method of testing cereals has been under way for two years, it is felt that insufficient data is available to justify publishing the results at this time. This method of testing cereals has proven very convenient for testing new introductions and varieties not considered of sufficient importance to justify their inclusion in the regular variety tests.

The land devoted to cereal investigational work produced a heavy crop of alfalfa in 1925. The land was manured and ploughed as soon as the hay was harvested and was treated as a fallow for the balance of the year, but on account of so much volunteer alfalfa, was backset in October. It was in ideal tilth in the spring.

The variety tests presented in this report were all grown in one-fortieth-acre plots which had the borders and ends removed before harvest, thus reducing



the area to one-fiftieth of an acre. The plots all have a four-foot path at the sides and a sixteen-foot roadway at the ends. The borders and ends of the plots are removed to eliminate the abnormal growth resulting from the proximity in the border utilizing the moisture and plant food available in the paths and roadways. The yields produced by the plots are thus made more representative of field conditions.

#### VARIETY TESTS WITH SPRING WHEAT

The wheats included in this experiment were seeded on May 4 in duplicate one-fortieth-acre plots. The yields and other data are presented in the table relating to this phase of the cereal work.

#### VARIETY TESTS WITH SPRING WHEAT

Variety	Date of ripening	Number of days maturing	Length of straw	Strength of straw	Yield of grain per acre	
			inches		bush. lb.	
Crown Ottawa 353.....	Aug. 20	107	33	7	38 58	
Duchess Ottawa 933.....	" 19	106	35	10	44 10	
Early Red Fife Ottawa 18.....	" 29	116	34	10	45 50	
Red Bobs Early Triumph.....	" 27	114	37	10	48 20	
Garnet Ottawa 652.....	" 21	108	34	10	48 45	
Hard Federation.....	" 24	111	29	10	40 50	
Huron Ottawa 3.....	" 26	113	33	10	52 5	
Kota.....	" 27	114	36	6	46 15	
Kitchener.....	" 26	113	36	10	55 0	
Major Ottawa 522.....	" 24	111	44	6	43 45	
Marquis Dom. Chemist.....	" 28	115	38	9	52 55	
Marquis Ottawa 15.....	" 29	116	41	10	46 27	
Marquis 10 B.....	" 29	116	36	10	42 30	
Master Ottawa 520.....	" 21	108	40	10	36 27	
Pioneer.....	" 19	106	34	10	47 17	
Prelude Ottawa 135.....	" 19	106	35	10	45 0	
Producer Ottawa 197.....	" 27	114	34	10	53 20	
Quality.....	" 26	113	37	10	46 40	
Renfrew.....	" 29	116	37	10	54 10	
Reward Ottawa 928.....	" 24	111	36	10	45 0	
Ruby Ottawa 623.....	" 20	107	34	10	40 12	
Red Bobs Supreme.....	" 26	113	37	10	50 50	
Red Bobs No. 222.....	" 24	111	36	10	55 52	

#### SPRING WHEAT—FIVE-, FOUR- AND THREE-YEAR AVERAGES

Variety	Five-year average		Four-year average		Three-year average	
	Number of days maturing	Yield	Number of days maturing	Yield	Number of days maturing	Yield
		bush. lb.		bush. lb.		bush. lb.
Crown Ottawa 353.....	104	37 58	112	35 32	111	43 30
Duchess Ottawa 933.....			111	39 3	110	46 0
Early Red Fife Ottawa 18.....	125	42 26	124	39 22	122	45 0
Red Bobs Early Triumph.....	121	47 59	119	45 4	117	52 10
Garnet, Ottawa 652.....	113	45 14	111	41 19	109	50 10
Huron Ottawa 3.....	125	45 1	119	41 31	117	48 10
Kitchener.....	125	49 41	123	49 39	121	56 10
Major Ottawa 522.....	119	40 52	117	39 28	115	45 10
Marquis D.C.....	122	48 1	121	46 26	119	55 10
Marquis Ottawa 15.....	122	46 2	121	45 18	119	52 10
Marquis 10 B.....			121	43 29	119	49 10
Master Ottawa 520.....			112	32 14	109	37 10
Prelude Ottawa 135.....	110	31 55	109	31 44	107	39 10
Producer Ottawa 197.....	121	49 48	119	45 8	117	53 10
Reward Ottawa 928.....			115	38 39	112	42 10
Ruby Ottawa 623.....	115	35 1	113	32 57	111	38 10
Red Bobs Supreme.....	121	50 28	119	46 25	117	53 10

As one year's experiments might give somewhat misleading impressions as to the relative value of the different varieties, the three-, four- and five-year averages are also given. A few of the varieties namely Kota, Pioneer, Quality, Ashfrew and Red Bobs 222, have been grown in our test plots for only one or two years, hence are not included in the averages.

Garnet Ottawa 652 is very much in the public eye at present. Experimental data and field observations indicate that this variety will fill a long felt need in central Alberta. It gives a yield which compares favourably with the best-yielding sorts, and, in addition to this, matures as quickly as any of the early maturing sorts with the exception of Prelude. The writer believes this variety will largely replace all others on the heavier black land of central and northern Alberta where late-maturing sorts are subject to frost injury. For information concerning the milling and baking quality of this variety, the reader is referred to a publication on Garnet wheat by the Dominion Cerealists, Central Experimental Farm, Ottawa, Ont.



Comparison of wheat varieties. Note tall off-type strain growing among pure lines of Marquis.

An area of 61 acres of Garnet was grown by the Station during the past season. Of this area, 15 per cent only was summer-fallowed or followed a hoed crop. The average yield produced was  $40\frac{1}{2}$  bushels per acre. Samples of this wheat were graded by the Western Grain Inspection Division and were placed in the grade higher than Marquis. The difference in the local price of the different grades was 13 cents per bushels, a point worthy of some consideration.

Since varieties grown in test plots are usually cut as soon as they are ripe, usually definite information as to the tendency of the varieties to shatter is not available. The season of 1926 provided an excellent test for Garnet in this respect. A 34-acre field of Garnet, because of pressure of other work, was allowed to become very ripe. Just as it was to be cut, heavy storms of rain and snow occurred which delayed cutting for fully two weeks. When the grain

was cut the shattering did not exceed two per cent, while the grain itself as high as Garnet which was standing in the stook during the same year. Although a yield of 46 bushels per acre was threshed, no lodging occurred as a result of the severe storms.

Three selections of Red Bobs, namely, Early Triumph, Supreme and No. 222, are also attracting considerable attention at the present time. These are excellent yielding wheats and are approximately midway between Marquis and Garnet in maturity. In wet seasons these selections of Red Bobs show greater susceptibility to weathering and minor plant diseases, such as glume rot, than some of our standard sorts. For this reason, they have to grade slightly lower than some of the earlier maturing sorts with a softer and flintier kernel. They appear to be wheats of sufficient merit to warrant consideration.

Since Garnet is an earlier maturing sort than Marquis or the Red selections, it would seem reasonable that the former variety should be grown in districts where Marquis is subject to frost injury. The difference in yield produced by these types over a period of years is not sufficient to justify recommendation of one variety over another on a yield basis.



Garnet wheat yielding 44 bushels per acre on stubble.

Renfrew, a new variety developed and distributed by the University of Alberta, Edmonton, Alberta, is a heavy yielding sort but is proving too late maturing to make it a safe crop for central Alberta. It possibly may be a valuable wheat for districts with a longer growing season.

Reward Ottawa 928, a new variety receiving considerable publicity at the present time, has not demonstrated that it possesses sufficient merit to warrant its distribution as yet.

Hard Federation, Kota and Quality are wheats of secondary importance in that they have nothing to warrant growing them in preference to our standard varieties.

If Early Red Fife Ottawa 18 is a wheat which has never received the consideration due it. It is an excellent wheat in every respect, but since it takes slightly longer to mature than Marquis, it is doubtful if it would be advisable to replace Marquis with this variety.

Kitchener needs no introduction in most communities. It is an excellent wheat and doubtless will continue to be grown to a considerable extent in districts where it has proven satisfactory.

#### VARIETY TESTS WITH OATS

Eighteen varieties of oats were seeded in duplicate plots on May 6. They made a normal growth and development until the abnormal harvesting season which prevented the medium and late maturing varieties ripening in a normal way. A few of the duplicate plots were never harvested as they were flooded with water until so late that any yields obtained would be of no experimental value. The yields and other data are published in tabular form.

#### VARIETY TESTS WITH OATS

Variety	Date of ripening	Number of days maturing	Length of straw	Strength of straw	Yield of grain per acre	Weight per measured bushel
			inches		bush. lb.	lb.
aska.....	Aug. 10	96	39	8	73 18	37
inner Dixon.....	" 28	114	50	10	74 9	36.5
inner Dow.....	" 28	114	50	10	93 13	40
inner MacDonald 144.....	" 28	114	50	10	102 7	38.5
inner Ottawa 49.....	" 28	114	50	10	116 6	42
inner Sask. 144.....	" 28	114	50	10	105 5	40
inner Waugh.....	" 28	114	50	10	91 6	38.5
ubency.....	" 7	93	36	8	76 4	34
ld Rain.....	" 24	110	51	10	75 13	40
h Victor.....	" 26	112	50	10	83 28	39
rel Ottawa 477.....	" 19	105	31	10	65 3	43
ader.....	" 26	112	42	10	84 19	38
acy Ottawa 678.....	" 21	107	36	10	70 24	39
erty Ottawa 480.....	" 19	105	32	10	35 10	43
ngfellow 478.....	" 24	110	46	10	64 24	36
A.C. No. 3.....	" 11	97	36	8	76 16	35
ter King.....	" 26	112	43	10	45 20	38.5
tory.....	" 26	112	40	10	79 14	38

#### OATS—FIVE,- FOUR- AND THREE-YEAR AVERAGES

Variety	Five-year average		Four-year average		Three-year average	
	Number of days maturing	Yield per acre	Number of days maturing	Yield per acre	Number of days maturing	Yield per acre
		bush. lb.		bush. lb.		bush. lb.
aska.....			99	62 28	97	67 26
inner Dixon.....					124	82 0
inner Dow.....					124	92 2
inner MacDonald 144.....					123	100 25
inner Ottawa 49.....	121	96 31	122	89 22	123	100 4
inner Sask. 144.....			115	86 4	123	100 4
inner Waugh.....					123	93 9
ubency.....	99	68 9	98	65 8	96	78 2
ld Rain.....	112	88 17	112	79 20	110	88 29
h Victor.....	115	89 27	114	77 14	112	87 0
rel Ottawa 477.....			107	52 15	105	61 14
ader.....	115	91 7	113	82 15	112	92 1
acy Ottawa 678.....			108	76 7	105	85 5
erty Ottawa 480.....	105	42 17	104	42 17	102	49 1
ngfellow 478.....	109	73 9	109	88 10	108	78 6
A.C. No. 3.....			100	64 15	98	77 27
ter King.....	112	63 32	111	55 25	109	62 25
tory.....	115	83 17	114	74 13	112	84 19

It will be seen that the Banner selections produced the heaviest yield any of the varieties tested at this Station. Banner is not popular with growers because it is not a good exhibition oat. It is not as plump as some of the other varieties such as Victory, but it is one of the best commercial varieties in the seed trade. The straw of Banner oats is finer and more flexible than other heavy yielding sorts. For this reason it is more suitable for greenfeed and has a greater tendency to straighten up after lodging than some of the other sorts.

Victory is an excellent variety and can be depended on to give a good account of itself. Victory has a particularly good record as an exhibition variety.

Leader, a variety which is very popular with some growers, has given good yields at this Station. It is not a very attractive oat, having very coarse leaves and leaves. It is the writer's third choice as a suitable variety for central Alberta. When grown under very favourable conditions Leader will produce four to five kernels per spikelet. This has led many growers to believe that it is a heavier yielding sort than is actually the case.

Alaska, our heaviest yielding early maturing sort, has never received much consideration it merits. While it cannot compete with the heavier yielding sorts in yield per acre, it is unreservedly recommended for conditions where an earlier maturing sort than Banner is required.

The other varieties mentioned are of secondary importance and should be grown in preference to the above mentioned varieties.

Liberty and Laurel are recommended where a hullless variety is desired.

#### VARIETY AND STRAIN TESTS WITH BARLEY

Seventeen varieties of barley were grown in duplicate plots. They were seeded on May 7 and made a normal growth throughout the season. The yields and other data are presented in tabular form.

VARIETY TESTS WITH BARLEY, 1926

Variety	Date of ripening	Number of days maturing	Length of straw	Strength of straw	Yield of grain per acre	Weight of straw per bushel
			inches		bush. lb.	
Barks.....	Aug. 28	112	29	8.5	44 38	
Bearer Ottawa 475.....	" 24	108	29	8.5	69 38	
Canadian Thorpe.....	" 24	108	30	8.5	48 33	
Chinese Ottawa 60.....	" 16	100	32	9	52 4	
Duckbill Ottawa 57.....	" 24	108	26	8.5	34 18	
Feeder Ottawa 561.....	" 12	96	42	9	39 15	
Penil Ottawa 670.....	" 12	96	26	9	42 21	
Gold.....	" 24	108	28	9	39 40	
Himalayan Ottawa 59.....	" 10	94	28	7.5	52 29	
Junior Ottawa 471.....	" 9	93	36	7.5	48 21	
Manchurian Ottawa 50.....	" 19	103	32	8	67 9	
O.A.C. No. 21.....	" 19	103	32	8	63 1	
Stella Ottawa 58.....	" 18	102	37	8	53 19	
Success.....	" 18	102	42	8	40 18	
Trebi.....	" 17	101	34	9	72 19	
574 B.....	" 15	99	38	8.5	45 15	
465 C.....	" 12	96	36	8	42 9	



## BARLEY—FIVE-, FOUR- AND THREE-YEAR AVERAGES

Variety	Five-year averages		Four-year averages		Three-year averages	
	Number of days maturing	Yield per acre	Number of days maturing	Yield per acre	Number of days maturing	Yield per acre
		bush. lb.		bush. lb.		bush. lb.
Barks.....	114	55 29	112	45 45	109	50 33
earer Ottawa 475.....	112	71 44	111	64 43	104	67 17
hinese Ottawa 60.....	103	46 40	103	46 40	98	51 31
uckbill Ottawa 57.....	112	37 40	112	34 16	106	39 32
eeder Ottawa 561.....	103	38 12	103	35 41	97	39 15
enil Ottawa, 670.....					96	33 21
old.....	112	45 20	111	36 37	105	37 11
imalayan Ottawa 59.....	99	50 24	96	46 47	91	52 37
enior Ottawa 471.....	98	52 42	96	49 29	91	55 2
anchurian Ottawa 50.....	106	48 28	106	43 10	99	51 26
A.C. No. 21.....	105	52 13	105	48 9	99	52 42
tella Ottawa.....	103	47 20	104	42 13	98	48 45
uccess.....	96	37 19	96	38 21	93	44 38
rebi.....	104	61 1	102	57 30	98	65 22
74 B.....	104	53 41	102	45 9	95	48 28
65 C.....	97	34 21	97	32 27	92	37 9

Barley is not grown to a large extent in central Alberta, but the Canada Malting Company, is endeavouring to revive an interest in this crop. Its efforts to date have met with some success in that growers are paying more attention to the varietal differences. Fortunately the findings of the brewers coincide with the findings of the experimentalists in that some of the heaviest yielding sorts have proven to be the best brewing barleys.

The varieties recommended for central Alberta are O.A.C. No. 21 and Manchurian Ottawa 50. These are standard sorts and are available in the seed trade.

Trebi and Barks, two heavy yielding sorts, while good commercial and feed barleys, are not favoured by the brewers. They have the added disadvantage of having a rather short straw which makes them unsuitable for some districts.

## VARIETY AND STRAIN TESTS WITH WINTER WHEAT

Five varieties of winter wheat were tested in duplicate plots. The yield and other data are presented in tabular form.

## TESTS WITH WINTER WHEAT 1925-26

Variety	Date of ripening	Length of straw	Strength of straw	Yield per acre bushels		Weight per measured bushel
				bush.	lb.	lb.
Alberta Red.....	Aug. 8	32	8	27	18	57.5
Kanred.....	" 8	34	8	20	50	61.0
Kharkov C-I-1583.....	" 8	34	8	31	15	58.0
Kharkov Mont. 36.....	" 8	36	7	29	20	59.0
Turkey Red.....	" 8	36	7	27	43	58.5

Interest in winter wheats appears to be reviving as many farmers seem anxious to try this crop. Unfortunately a few farmers have had good success with small areas with the result that quite a number are stampeding into the production of this crop. Five varieties of winter wheat have been tested at this Station, and, without exception, considerable winter-killing has always occurred.

In the winter of 1925-26, quite the mildest on record, the winter injury amounted to 50 per cent. The reader's attention is drawn to a few reasons why one should not go into the production of winter wheat extensively:—

Winter wheats as a rule do not produce yields equal to spring wheats in central Alberta.

The production of winter wheats does not lengthen the harvest season as they ripen about the same time as our early maturing spring wheats.

The production of winter wheats is of little value in avoiding the spring rush of seeding, as the preparation for winter wheat is ideal preparation for spring wheat.

The writer believes that spring wheat production at the present time is much safer and more profitable than winter wheat production. On the other hand, there are districts in the park belt of the foothill country where winter wheat seems to give a good account of itself.

#### MISCELLANEOUS EXPERIMENTS

Variety and strain tests with field peas gave little or no data as a result of the heavy rains during the harvest season. Any varieties which were fully ripe did not ripen while those which were ripe sprouted so badly that they were worthless.

The variety tests with flax and buckwheat came to an unfortunate end in that the plots were flooded to such an extent that it was impossible to harvest the crop.

Variety tests with winter rye indicated that there is little to choose between varieties now available in the seed trade.

### FORAGE CROPS

The season of 1926 was not very satisfactory for some phases of experimental work with forage crops. The unusual amount of rainfall during autumn made the harvesting of corn, sunflowers, annual hays and roots very difficult. The winter of 1925-26, however, was very favourable in that very little winter killing occurred among biennials and perennials.

#### VARIETY AND STRAIN TESTS WITH ALFALFA

The object of this experiment is to determine the agricultural value of different strains and selections. Seven different varieties were grown in duplicate plots. The yields presented in the table relating to this experiment are an average of duplicate plots. The plots in question were seeded in June, 1925, on land which was treated as a summer-fallow before seeding.

#### VARIETY AND STRAIN TESTS WITH ALFALFA

Variety	Source	First cutting yield of hay per acre		Second cutting yield of hay per acre		Total yield of hay per acre	
		tons	lb.	tons	lb.	tons	lb.
Grimm, 4206.....	Alberta, Alfalfa Seed Growers' Association...	1	988	1	877	2	1,865
Grimm, A.B. Lyman....	A. B. Lyman.....	1	605	1	485	2	1,090
Cossack.....	Paramount Alfalfa Farm..	1	1,038	1	1,029	3	2,067
Cossack.....	Disco.....	1	1,017	1	1,017	3	2,034
Siberian.....	Paramount Alfalfa Farm..	1	991	1	274	2	1,265
Baldie.....	Disco.....	1	1,460	1	852	3	2,312
Turkestan.....	Steele Briggs Seed Co....	1	152	1	464	2	616

The yields produced by the different strains of alfalfa is not a true criterion of what one might expect in a normal season. The yields as presented show little in favour of any one variety. In a normal season yields are usually more in favour of strains produced under climatic conditions similar to those which obtain in central Alberta. For this reason, the seed produced by the Alberta Alfalfa Seed Growers' Association of Brooks, Alberta, or by the Paramount Alfalfa Farm of Rife, Alberta; or seed of any of the above varieties or strains when grown in Alberta, is to be recommended before any seed produced in milder climates or commercial seed of unknown origin.

As a result of the very mild weather of 1925-26 there was no winter-killing of any of the alfalfa varieties or strains. There was a slight difference in the amount and type of growth in the different strains, all producing good yields of hay of excellent quality. The chief difference was in the colouring of the variegated bloom. The Cossack and Siberian strains produced by the Paramount Alfalfa Farm showed more yellow in the variegated bloom with the stem and leaf tending towards the Falcata type of alfalfa.

#### VARIETY AND STRAIN TESTS WITH SWEET CLOVER

The object of this experiment is to determine the relative value of different varieties and strains of sweet clover for central Alberta. Eight varieties were tested in duplicate plots which were seeded on June 18 without a nurse-crop on land which was summer-fallowed the previous year. The yields produced by the different strains are presented in the table pertaining to this experiment.

VARIETY TESTS WITH SWEET CLOVER

Variety	Source	First cutting yield of hay per acre		Second cutting yield of hay per acre		Total yield of hay per acre	
		tons	lb.	tons	lb.	tons	lb.
Arctic Sask. 439.....	University of Sask.....	1	1,765	.....	922	2	687
Arctic.....	Sask. Seed Growers.....	1	1,389	.....	773	2	162
White Blossom.....	Commercial.....	2	680	.....	556	2	1,236
Zouave 778.....	University of Sask.....	2	125	.....	823	2	1,948
Grundy.....	U.S.A.....	2	1,912	.....	1,132	3	1,044
Dwarf.....	U.S.A.....	2	348	.....	1,369	2	1,717
Yellow Blossom.....	Commercial.....	1	1,825	.....	1,398	2	1,223
Maccor.....	Manitoba Agricultural College.....	2	1,562	.....	.....	.....	.....

As a result of the mild winter of 1925-26 no winter-killing occurred among the sweet clover.

The yields produced by the different varieties indicate that the Grundy sweet clover is the heaviest yielder. This is a very promising strain for districts where it is not subject to winter-killing, in that it is a heavy yielder and produces finer stems and thus a better quality hay than the other strains.

The Arctic strains produced very similar results with the advantage in favour of the registered strain. The Arctic variety is recommended for general use as it has proven the most hardy under adverse climatic conditions of any of the varieties tested at this Station.

The Zouave 778 is a yellow blossom, rather late maturing, strong-growing sort of no special merit.

The Maccor is late maturing and a very strong grower. It did not produce much second growth, although it is believed that more second growth would have developed if the plot had not gone a few days beyond the proper stage of maturity before being cut the first time.

The Dwarf and Yellow Blossom varieties possess no special merit and were the least valuable of those tested.

## VARIETY AND STRAIN TEST WITH RED CLOVER

Thirteen varieties and strains of red clover from different sources tested in duplicate plots. They were seeded on June 18 without a nurse-crowd land which was summer-fallowed the previous season. They went into winter in excellent condition. As a result of the very mild winter, the red clovers were not completely winter-killed as is usually the case. The percentages of winter-killing as well as the yields per acre are given in tabular form.

VARIETY TESTS WITH RED CLOVER

Variety	Source	Per cent winter killing	First cutting yield of hay per acre		Second cutting yield of hay per acre		Total yield of hay per acre
			tons	lb.	tons	lb.	tons
Early Swedish.....	Gen. Swedish Seed Co..	22.6	.....	1,597	1	696	2
Chauteauguay.....	Que.....	39.5	.....	1,705	2	212	2
Alfred.....	Ont.....	10.0	1	320	1	1,326	2
Marche.....	Nor. Cent. Italy.....	47.2	.....	1,090	1	961	2
Umbria.....	Nor. Cent. Italy.....	62.7	.....	899	1	425	1
Northern Italy.....	Northern Italy.....	83.2	.....	717	1	509	1
Emilia.....	Italy.....	79.3	.....	934	1	144	1
Dauphine.....	S.E. France.....	54.5	.....	1,474	1	906	2
St. Clett.....	Que.....	30.0	.....	1,450	1	1,371	2
Med. Late Swedish.....	Gen. Swedish Seed Co..	11.2	1	1,881	.....	.....	1
Late Swedish.....	Gen. Swedish Seed Co..	9.5	1	1,664	.....	.....	1
Altaswede.....	University of Alberta...	14.1	2	538	.....	.....	2
Kenora.....	Kenora Dist. Co-oper- ative.....	15.2	2	212	.....	.....	2

It will be seen that there is considerable variation in the amount of winter-killing which occurred in the different varieties. As a rule, all the clovers are completely winter-killed at this Station. The past winter, because of the absence of low temperatures, appears to have provided suitable conditions to give an excellent comparison of the relative worth of the different sorts in this respect. The varieties produced in milder climates, such as France and Italy, suffered considerable winter injury, while seed grown in Sweden and Northern Ontario proved most hardy.

The reader's attention is particularly drawn to the fact that all the varieties of red clover suffered from winter injury to some extent even in such a mild winter as 1925-26.

The varieties which produced only one cutting belong to the mammoth strains of red clovers while those which produced two cuttings belong to the common red type. It will be seen that the mammoth reds as a class are hardier than the common reds, and while the mammoth reds produced only one cutting, the common reds in most cases equalled the two cuttings of the common red. On the other hand, the hay produced by the common reds is much superior in quality to that produced by the mammoth reds, having a much finer stem and leaf growth.

## VARIETY TESTS WITH WHITE DUTCH AND ALSIKE CLOVER

The varieties of White Dutch and Alsike clovers were seeded on land which was summer-fallowed the previous year. The past season was ideal for development of this legume. In fact conditions were so favourable that the Alsike developed a heavy second cutting. As a result of the unusual conditions some rather phenomenal yields were produced. A table giving the yields and other data is presented.

## VARIETY TESTS WITH WHITE DUTCH AND ALSIKE CLOVER

Variety	Source	Per cent winter killing	First cutting yield of hay per acre		Second cutting yield of hay per acre		Total yield of hay per acre	
			tons	lb.	tons	lb.	tons	lb.
ish Stryno.....	H. Hartman, Denmark.	7.1	.....	1,405	1	529	1	1,934
ino.....	Idaho.....	2.9	.....	1,637	1	992	2	629
mercial.....		0.0	1	316	1	458	2	774
ke.....	Kenora Co-operative....	0.0	1	1,324	1	1,229	3	553

It will be noticed that there is relatively little winter-killing in this class of clovers. In fact these clovers are much more winter-hardy than the red clovers.

The yields are decidedly above the average and suggest that these legumes may have possibilities as pasture crops for central Alberta, more particularly moist locations.

## VARIETY AND STRAIN TESTS WITH GRASSES

In this experiment different strains of timothy and western rye are compared with brome and kentucky blue. The plots were seeded in duplicate on land which was summer-fallowed the previous season. The yields are presented in tabular form.

## VARIETY AND STRAIN TESTS WITH GRASSES

Variety	Source	First cutting yield of hay per acre		Second cutting yield of hay per acre		Total yield of hay per acre	
		tons	lb.	tons	lb.	tons	lb.
mmmercial brome.....		3	792	.....	1,865	4	657
ortion timothy.....	C.E.F.....	2	1,787	1	38	3	1,825
mmmercial timothy....	Steele Briggs Seed Co.....	3	3.1	1	750	2	1,061
azer western rye.....	C.E.F.....	3	118	.....	519	3	637
mmmercial western rye.....		2	1,517	.....	552	3	69
uckey blue.....		2	1,291	.....	1,776	3	1,067

As a result of the unusually wet fall the grasses produced a heavy second growth, which in the case of brome, timothy and blue grass is heavier than the first cutting these crops will produce in a dry year. The rye grass plots gave comparatively small second cutting which indicates that this grass would not be a satisfactory pasture grass. The unusually heavy yield of second cutting produced by the timothy indicates that in a wet year timothy would be a much better pasture grass than it is generally credited with being. Brome and blue grass have both given excellent accounts of themselves. The writer is of the opinion that blue grass might be used to advantage, both for pasture and hay, in a more extensive way than is the case at present, as the hay or pasture produced by blue grass is superior in quality to that produced by any of the other grasses.

## VARIETY TESTS WITH CORN

Twenty-three varieties of corn were tested in quadruplicate plots. They were seeded on May 25 and were harvested on October 1. The yields and other data are presented in the table relating to the experiment.



## VARIETY TESTS OF CORN

Variety	Source	Height in inches	Date of tasselling	Date of silking	Yield
Longfellow.....	Disco.....	46	Sept. 9		
North Western Dent.....	Disco.....	48	Aug. 22		
90-day White Dent.....	Disco.....	46	Sept. 1		
Compton's Early.....	J. O. Duke.....	46	Sept. 1		
Golden Glow.....	J. O. Duke.....	54	Aug. 23		
Leaming.....	J. O. Duke.....	51			
Longfellow.....	J. O. Duke.....	50	Sept. 3		
Wisconsin No. 7.....	J. O. Duke.....	50			
North Western Dent.....	E. F. Brandon.....	48	Aug. 9	Aug. 28	
Twitchell's Pride.....	E. F. Fredericton.....	50	Aug. 2	Aug. 20	
Gehu (North Dakota).....	A. E. McKenzie.....	46	Aug. 2	Aug. 22	
Northwestern Dent (Nebraska).....	".....	48	Aug. 30		
Northwestern Dent (North Dakota).....	".....	46	Aug. 4	Sept. 1	
Northwestern Red or Smoky Dent.....	Rennie.....	52			
Quebec No. 28.....	Dr. Todd.....	48	Aug. 28		
Howes Alberta Flint.....		32	July 23	Aug. 8	
Cold Resistant.....	University of Wisconsin.....	54	Aug. 15	Sept. 6	
Golden Glow.....	University of Wisconsin.....	51	Sept. 2		
Hybrid.....	Wimple.....	50	Sept. 1		
Yellow Dent.....	Wimple.....	46	Sept. 6		
Falconer.....	Oscar Wills.....	46	Aug. 9	Sept. 6	
Wis. No. 7 X Howes Alberta Flint.....	E. Farm, Harrow.....	52	July 30	Aug. 15	
Canadian Yellow Flint.....	Dup. and Ferguson.....	45	Aug. 23		

The reader's attention is drawn to the varieties which had not advanced to the silk stage. These varieties are not suitable for growing in central Alberta. Northern-grown seed of Gehu and Northwestern Dent is used for the production of ensilage corn at this Station and have given satisfactory results. Falconer has been grown as a field crop for one year only when it produced satisfactory results. The selection of a variety for central Alberta should be limited to varieties which attained at least the silking stage of maturity in 1926. All the varieties appeared to be slightly later in maturing this year than previously.

## VARIETY TESTS WITH SUNFLOWERS

Four varieties of sunflowers were seeded on May 26 and were harvested on October 1. They were thinned to 6 inches apart in the row. The yield and other data are included in the table relating to this experiment.

## SUNFLOWERS—VARIETY TEST

Variety	Source	Height in inches	Date of first bloom	Stage of maturity	Yield
Giant Russian.....	Disco.....	100		no bloom	
Ottawa No. 76.....	C. E. Farm.....	75	Aug. 22	full bloom	
Mennonite.....	Rosthern.....	40	Aug. 10	Ripe	
Giant Russian.....	A. E. McKenzie.....	98	Sept. 1	10 per cent bloom	

Field experiments with silage crops indicate that the Giant or Mammoth Russian type of sunflowers is most satisfactory for silage purposes.

## VARIETY TESTS WITH MANGELS

Twenty-nine varieties of mangels were seeded in quadruplicate. The plots consisted of single rows 66 feet long. The rows were spaced 30 inches apart. The yield presented in the following table is the average of the four rows. The mangels were seeded on May 23 on land which was partially summer-fallowed the previous season. They were harvested on September 30.

## MANGELS—VARIETIES AND STRAINS

Variety	Source	Yield per acre green weight tons
Yellow Intermediate	C.E.F.	18.0
Danish Sludstrup	Ewing	20.5
Golden Tankard	Ewing	13.9
Barres Half Long	General Swedish Seed Co.	13.8
Barres Oval	General Swedish Seed Co.	16.3
Red Eckendorffer	General Swedish Seed Co.	18.0
Svalof Original Alfa	General Swedish Seed Co.	12.9
Svalof Original Rubra	General Swedish Seed Co.	15.3
Yellow Eckendorffer	General Swedish Seed Co.	17.8
Eckendorffer Yellow	H. Hartman	15.4
Eleventhman Mammoth	H. Hartman	13.9
Eckendorffer Red	H. Hartman	18.1
Herritslev Barres	H. Hartman	17.9
Green Top Half Sugar	H. Hartman	19.5
Red Top Half Sugar	H. Hartman	17.5
Costed Barres	H. Hartman	20.1
Tryno Barres	H. Hartman	19.1
Barroge Barres	H. Hartman	18.9
Danish Sludstrup	K. McDonald	17.5
Giant Long Red	A. E. McKenzie	16.3
Monarch Half Long White	A. E. McKenzie	17.5
Yellow Intermediate or Gatepost	A. E. McKenzie	18.5
Giant Yellow Intermediate	Steele Briggs	20.4
Giant White Sugar	Steele Briggs	18.4
Giant White Feeding Sugar	Steele Briggs	21.3
Golden Fleshed Tankard	Steele Briggs	16.5
Royal Mammoth Long Red	Steele Briggs	15.4
Royal Giant Sugar	Steele Briggs	22.9
Yellow Globe	Steele Briggs	20.0

Five of the varieties mentioned in the table bolted to seed to some extent. Two per cent of Svalof Original Alfa from the General Swedish Seed Co., one-quarter per cent of Half Sugar Red Top from H. Hartman Seed Co., three per cent of Yellow Intermediate or Gatepost from A. E. McKenzie Seed Co., four per cent of Giant Yellow Intermediate from Steele Briggs Seed Co., and one-quarter of one per cent of Giant White Sugar from Steele Briggs Seed Co., bolted to seed. As roots which have produced seed stalks are useless for feeding purposes, this characteristic tends to make these varieties less valuable.

The reader's attention is drawn to four varieties which represent three different types of roots. These are Giant Yellow Intermediate of the yellow intermediate type, Giant White Feeding Sugar, and Royal Giant Sugar of the intermediate half sugar type and Yellow Globe of the Globe type. From the information at hand, the grower is recommended to make his selection from one of these varieties or types.

## VARIETY TESTS WITH TURNIPS AND SWEDES

Nineteen varieties of turnips and swedes were seeded on May 22 on land which grew a crop of alfalfa the previous year and was manured and fallowed for the balance of the season. The roots were harvested on September 30.

## VARIETY TESTS WITH TURNIPS AND SWEDES

Variety	Source	Percent dry matter	Yield per acre of tops
Perfection.....	Dupuy and Ferguson.....	9.47	2.1
Bangholm.....	Ewing.....	9.57	2.1
Bangholm.....	Charlottetown.....	9.37	2.1
Bangholm.....	General Swedish Seed Co.....	9.67	2.1
Yellow Improved.....	General Swedish Seed Co.....	8.59	2.1
Bangholm.....	Halifax Seed Co.....	11.33	2.1
Olsgaard Bangholm.....	H. Hartman.....	8.50	2.1
Bangholm.....	A. E. McKenzie.....	9.86	2.1
Breadstone Green Top.....	A. E. McKenzie.....	10.06	2.1
Kangaroo.....	A. E. McKenzie.....	9.86	2.1
Monarch or Elephant.....	A. E. McKenzie.....	9.67	2.1
North Western.....	A. E. McKenzie.....	10.55	2.1
Superlative.....	A. E. McKenzie.....	8.79	2.1
Ditmars.....	McNutt.....	9.67	2.1
Good Luck.....	Steele Briggs.....	9.86	2.1
Selected Purple Top.....	Steele Briggs.....	9.37	2.1
Selected Westbury.....	Steele Briggs.....	10.25	2.1
Bangholm.....	Kentville.....	11.43	2.1
Bangholm.....	Nappan.....	11.33	2.1

Of the different varieties of swedes tested, the Bangholm appears to be the most satisfactory as any, although the Yellow Improved from the General Swedish Seed Co., was a very promising sort. The Good Luck variety from the Steele Briggs Seed Co., produced a very low yield as a result of the seed containing 65 per cent admixture of rape.

## VARIETY TESTS WITH CARROTS

Eleven varieties of field carrots were grown on land which produced a good cutting of alfalfa, was manured, ploughed and treated as a summer-fallow the balance of the season. They were seeded on May 31 and harvested September 30.

## CARROTS—VARIETY TEST

Variety	Source	Per cent dry matter	Yield per acre of roots
Danish Champion.....	Central Experimental Farm.....	9.57	3.1
Improved Intermediate White.....	Dupuy and Ferguson.....	9.28	3.1
White Half Long.....	General Swedish Seed Co.....	10.06	3.1
Champion.....	H. Hartman.....	10.74	3.1
White Belgian.....	H. Hartman.....	10.74	3.1
James.....	McFayden.....	11.82	3.1
Long Orange Belgian.....	A. E. McKenzie.....	11.52	3.1
Improved Short White.....	Steele Briggs.....	10.06	3.1
Large White Belgian.....	Steele Briggs.....	9.28	3.1
Long Red Surrey.....	Steele Briggs.....	10.16	3.1
White Intermediate.....	Experimental Farm, Summerland.....	8.59	3.1

The Improved Short White from Steele Briggs Seed Co., and White Intermediate from Summerland, British Columbia, were most productive. The short and intermediate types are the most satisfactory types to grow. The results of this experiment indicate that these types are as productive as the longer types.

## VARIETY TESTS WITH SUGAR BEETS

Three varieties of sugar beets were tested in 1926. They were seeded on May 22 and were harvested on September 22. Dippe gave a yield of 7.9 tons, Horning gave 7.3 tons, and Shreiber and Sons gave a yield of 5.7 tons per acre.

## CEREAL DISEASE CONTROL

Experiments mentioned under this heading are conducted in co-operation with officers of the Division of Botany, of the Dominion Experimental Farms.

## CO-OPERATIVE EXPERIMENTS IN SMUT CONTROL

As in previous years, experiments in the control of smut by seed treatment were conducted in co-operation with the Division of Botany under the direction of Mr. I. L. Conners. The results of these experiments are here only briefly summarized; a full account will be published in the Report of the Division of Botany.

The results for this year show that copper carbonate dust is to be preferred over formalin for the control of wheat bunt. Copper carbonate not only effectively destroys the spores on the seed, but also causes no injury to the germination of the dusted seed. The stand of the formalin-treated plots was reduced over 20 per cent while there was no reduction in the stand when the seed was dusted with copper carbonate. A further important advantage of copper carbonate dust is that it may be applied in the winter season, and treated seed may then be stored until it is wanted for sowing. Two ounces of copper carbonate is used to each bushel of grain. The dust cannot be applied to the seed by simply shovelling the seed and dust together; some kind of a mixing-machine is necessary. Such a mixer may be constructed on the farm. Copper carbonate is poisonous; accordingly, breathing the dust should be avoided when the seed is being treated, and dusted seed should not be fed to stock.

Covered smut in hulless oats was also successfully controlled with copper carbonate. This treatment is particularly recommended for smut in hulless oats, as while the formalin treatment practically kills germination in hulless oats, there is no injury from the copper carbonate treatment. In similar experiments for control of smut in common oats conducted at other Stations, copper carbonate was ineffective. Formalin should be used to eliminate smut in common oats.

A pickling machine manufactured by the Gas Grain Pickler Co., Regina, Sask., was used at Indian Head to treat bunted wheat. Some of the treated wheat was sown at Lacombe. Examination of the plot showed that the treated seed developed almost as much bunt as the untreated. These results confirm those obtained by Mr. Fraser in 1921 and 1922 (Report of Dom. Botanist, 1922), who clearly showed that the method was unsatisfactory.

## POULTRY

Bronze turkeys, Pekin and Rouen ducks, and White Wyandotte hens are kept at the Station.

## TURKEYS

Several years ago "blackhead," a very serious disease, attacked the turkeys at the Station and for four or five years it seemed impossible to raise turkeys. In 1924 yards were all ploughed and seeded to alfalfa, the old straw house was

destroyed and the old log house in which turkeys had been kept was frequently and thoroughly disinfected and whitewashed. The disease has apparently been eradicated as no losses have occurred during the last three years, although four years ago 70 per cent of the hatched died from blackhead, and five years ago 100 per cent of the hatch died.

Under these circumstances comparatively little experimental work with turkeys has been possible, as the main object has been to make sure that turkeys could again be raised. In 1926 eggs were hatched under hens and in incubators with results decidedly in favour of the hens. With the very rapid increase in turkey-raising in Alberta there is a wide demand for information and for breeding stock, and the turkey flock at the Station will be increased and various experiments started.

#### DUCKS

Both Pekin and Rouen ducks have been raised at the Station for several years, and during 1925 and 1926 some of the Rouen ducks were crossed with wild Mallard drake. This Mallard drake was caught when a few days old and raised with domestic ducks. He was almost as large as a Rouen drake, and the cross-breeds were many of them quite as large as the domestic ducks. The meat of the cross-breeds was somewhat darker, and the ducks were more active and hardy, particularly just after hatching. There does not, however, seem to be any decided advantage in the cross and as there is very little inquiry for information on ducks and almost no demand for breeding stock, the raising of ducks will be discontinued to make room for more turkeys.

#### WHITE WYANDOTTES

When in 1925 it was decided to keep only one breed at the Station and the Barred Rocks were discontinued, the laying flock was very much reduced. In building up a foundation flock of White Wyandottes only the very best pullets have been retained for the second year. As a result the flock on December 31, 1926, consisted of only 57 mature hens, 265 pullets and approximately 100 male birds, most of which are cockerels which will be sold to farmers for breeding.

#### BREEDING

The object of the breeding operations is to establish a flock of White Wyandottes that have good breed type and high egg production along with fertility, hatchability and large eggs. To this end, pedigree breeding is being carried out. By breeding birds of known ancestry, it is possible to develop birds along approved lines. The success of this phase of the poultry work may be judged from the results to date. The highest individual production has been 261 eggs by a hen. The highest during 1926 was 228 eggs by a pullet, and 226 eggs by a two-year-old hen. The average production of the flock was 189 eggs per bird. In breeding for size of egg, male No. H54 has sired pullets which have all laid eggs averaging over 24 ounces per dozen, with several pullets whose eggs averaged to 30 ounces. Fortunately these pullets have also been the most consistent heavy laying strain.

#### HATCHING RESULTS FROM HENS AND PULLETS

While in 1925 the results of this comparison were decidedly in favour of the eggs from pullets, the 1926 results were decidedly in favour of the eggs from hens. In 1926 the pullets were somewhat forced for production during the winter by heavy feeding, and also by the use of electric lights in the pens morning and evening. This undoubtedly reduced the fertility and probably also the vitality of the eggs from the pullets. The hens were not forced for laying



HATCHING RESULTS FROM HENS AND PULLETS

Ages	Total eggs set	Number fertile	Per cent fertile	Number chicks hatched	Per cent eggs hatched	Per cent eggs hatched	Per cent of chicks alive when wing banded	Per cent chicks hatched, alive when wing banded	Average number eggs required for one chick hatched	Average number fertile eggs required for one chick hatched	Average number eggs required for one chick when wing banded
Hens.....	1,725	1,240	71.88	557	32.28	44.91	406	72.89	3.056	2.22	4.24
Pullets.....	835	520	62.27	160	19.16	30.76	116	72.5	5.218	3.25	7.19
Totals.....	2,560	1,760	68.75	717	28.0	40.73	522	72.81	3.57	2.45	4.90

following table gives the 1926 results:—

## BEST DATE FOR INCUBATION

The object of this experiment is to determine the best date for incubation with regard to fertility, hatchability and livability. Eggs from different months are hatched and records kept of the fertility, hatchability and mortality of chicks to three weeks of age. The results are published in the table relating to this experiment.

## HATCHING RESULTS BY THE MONTH

Time set	Total number of eggs set	Number fertile	Per cent fertile	Number chicks hatched	Per cent total eggs hatched	Per cent fertile eggs hatched	Number chicks alive when wing banded	Average number eggs required for one chick hatched	Average number fertile eggs required for one chick hatched	Average number eggs required for one chick when wing banded
January.....	125	58	46.4	11	8.80	18.9	11	11.36	5.27	11.36
February.....	234	154	65.81	32	13.67	20.77	24	7.31	4.81	9.7
March.....	625	462	73.9	172	27.52	37.22	112	3.63	2.68	5.5
April.....	1,068	764	71.5	376	35.20	49.21	306	2.84	2.03	3.48
May.....	508	316	62.2	126	24.80	39.8	69	4.03	2.5	7.36

It would seem from this experiment that April is the best month for hatching. Surprising as it may appear, March showed the highest percentage of fertile eggs, while February, March, and April all showed a higher percentage of fertile eggs than May.

The average number of eggs required for one chick indicates that March and April are the best months for hatching. The average number of eggs required for one chick when wing-banded indicates that there was a heavier mortality among May-hatched chicks than among the April hatches. When every factor which influences the profit from poultry production is considered, it would seem that April is the best month for hatching, with March the second choice. Chicks hatched after the middle of May are rather late to make good mother layers.

#### FEEDS FOR FERTILITY, HATCHABILITY AND VIABILITY

The object of this experiment is to determine the effects upon fertility, hatchability and viability when supplementary feeds such as cod-liver oil, raw liver, bone meal, etc., are added to the regular ration given to breeding stock.

Equal groups of birds used for breeding purposes were housed, handled, and fed alike except for the special feeds added to the regular ration.

The feeds used were cod-liver oil, raw liver, and bone meal. These feeds were fed in conjunction with a dry mash of 100 pounds brans, 100 pounds shorts, 100 pounds oat chop, 50 pounds corn meal, 25 pounds meat scrap, and 3 per cent charcoal; and a scratch mixture of 100 pounds wheat and 50 pounds corn. The hatching results indicated little or no benefits from feeding cod-liver oil, raw liver or bone meal, although the chicks from hens fed cod-liver oil and bone meal were larger and more vigorous and matured earlier than those fed raw liver or the check lot which received no supplementary conditioner.

#### COMMERCIAL VS. HOME-MIXED MASH

In order to determine the relative value of home-mixed and commercial mash, an experiment was conducted again this year with two pens of White Wyandotte pullets. They were fed for comparison from November 1, 1925, to May 1, 1926. The commercial mash used was "Ogilvie's Laying Mash" and the home-mixed mash was made up as follows:—

	Pounds
Shorts .....	100
Corn meal.....	100
Bran .....	100
Beef scrap.....	25.

Both pens were fed scratch grain consisting of equal parts wheat and cracked corn. The scratch feed was fed in the litter and the mash was fed dry in a hopper and was always available. The pullets were given alfalfa as green feed and had free access to grit and buttermilk. Ten pullets were used in each lot. The results are as follows:—

#### COMMERCIAL VS. HOME-MIXED MASH

Feed under test	Mash	Scratch grain	Grit	Green Feed	Buttermilk	Value of feed	Number of eggs laid	Feed cost per dozen
	lb.	lb.	lb.	lb.	lb.	\$ cts.		cents
Commercial Mash.....	180	255	8	180	360	13 33	504	31.7
Home-mixed Mash.....	270	257	5½	180	360	12 77	457	33.5

The table shows that the commercial mash produced a total of 47 more on 92 pounds less feed than did the home-mixed. The cost per dozen eggs produced was 1.8 cents per dozen in favour of the commercial mash. A similar experiment conducted the previous year showed the reverse to be the case.

#### COMMERCIAL VS. HOME-MIXED SCRATCH GRAIN

In order to obtain further data on the relative value of home-mixed commercial scratch grain and the cost of egg production from each, an experiment was conducted again this year with two pens of White Wyandotte pullets. They were fed for comparison from November 1, 1925, to May 1, 1926. The commercial grain used was "Ogilvie's Scratch Grain" and the home-mixed consisted of equal parts wheat and cracked corn. Finely cut alfalfa was fed for greenfeed. Ten pullets were used in each lot. The results are shown in the following table:—

#### COMMERCIAL VS. HOME-MIXED GRAIN

Feed under test	Grain	Mash	Grit	Green-Feed	Buttermilk	Value of feed	Number of eggs laid
	lb.	lb.	lb.	lb.	lb.	\$	
Commercial grain.....	300	245	4½	180	360	15.53	639
Home-mixed grain.....	280	252	10½	180	360	13.00	744

It will be noted from the preceding table that the home-mixed grain produced a total of 105 more eggs at less cost than did the commercial. Hence the cost per dozen of eggs produced is decidedly in favour of the home-mixed grain. These results are in accord with those obtained from a similar test conducted the previous year.

#### COST OF REARING YOUNG CHICKS

Records were kept of the eggs, and fuel and feed required to hatch and rear a chick to the end of the brooder period, or approximately two months of age. No allowance however was made for labour, interest and depreciation on buildings. The figures that follow cover chicks hatched and purchased as follows:—

#### COST OF REARING CHICKS TO END OF BROODER PERIOD

Number of eggs set.....	2,560
Number of chicks hatched.....	717
Number of chicks purchased, May 12.....	200
Number of chicks alive, July 3.....	600
STATEMENT OF COST	
1,760 fertile eggs at \$1.50 per setting of 15.....	\$ 176 00
800 infertile eggs at 50 cents per dozen.....	33 33
200 baby chicks at 40 cents each.....	80 00
3,035 pounds hard coal at \$10 per ton.....	15 17
96 pounds chick feed (grains) at \$8 per cwt.....	7 68
222 pounds chick feed (grains) at \$3.25 per cwt.....	7 21
1 pound yeast at \$1.20 per pound.....	1 20
123 pounds bran at \$25 per ton.....	1 54
123 pounds shorts at \$27 per ton.....	1 66
62 pounds oat flour at \$2.25 per cwt.....	1 39
62 pounds corn meal at \$2.75 per cwt.....	1 70
62 pounds beef scrap at \$3.50 per cwt.....	2 17
13 pounds bone meal at \$2.50 per cwt.....	0 32
13 pounds grit at 75 cents per cwt.....	0 10
4 pounds charcoal at \$5.50 per cwt.....	0 22
1,100 pounds buttermilk at 20 cents per cwt.....	2 20
¼ gallon cod liver oil at \$1.75 per gallon.....	0 44
2 bushels sprouted oats at 40 cents per bushel.....	0 80
Total cost of 600 chicks, labour neglected.....	333 13
Cost per chick, labour neglected.....	0.555

On July 3 the chicks were taken out of the brooder and put on range. They were run on range until September 27, or approximately to five months of age. The number of chicks alive on that date and the cost of feed are shown in the following table:

#### COST OF REARING CHICKS TO FIVE MONTHS

Number of chicks alive July 3.....	600
Number of chicks alive September 27.....	597

#### STATEMENT OF COST

Cost of 600 chicks to July 3.....	\$ 333 13
466 pounds bran at \$25 per ton.....	5 82
466 pounds shorts at \$27 per ton.....	6 29
233 pounds oat flour at \$2.25 per cwt.....	5 24
233 pounds corn meal at \$2.75 per cwt.....	6 41
233 pounds beef scrap at \$3.50 per cwt.....	8 15
47 pounds bone meal at \$2.50 per cwt.....	1 17
47 pounds grit at 75 cents per cwt.....	0 35
14 pounds charcoal at \$5.50 per cwt.....	0 77
49 bushels wheat at \$1 per bushel.....	49 00
2,940 pounds cracked corn at \$52 per ton.....	76 44
13,960 pounds buttermilk at 20 cents per cwt.....	27 92
5 pounds yeast at \$1.20 per pound.....	6 00
Total cost of 597 chicks, labour neglected.....	526 69
Average cost per chick, labour neglected.....	0.882

## BEES

The results obtained with bees during the season of 1926 were the most satisfactory since bees have been kept at this Station. The bees wintered unusually well and during the summer 16 colonies produced an average of 115 pounds of extracted honey, and an increase of 11 colonies. Climatic conditions in both winter and summer were extremely favourable. Owing to the unusually mild winter very few colonies were lost. An abundance of moisture and warm weather developed a luxuriant bloom on the wild flowers which are the chief source of honey at Lacombe. This bloom continued on the many different kinds of wild flowers from early spring to late fall. The wild flower honey has a slightly amber colour with a very delicate and distinct odour and flavour which are very popular with those accustomed to central Alberta honey. Owing to the mild winter all clovers, red, alsike and sweet, did not suffer any winter-killing. A 40-acre field of sweet clover pasture one quarter mile from the apiary, provided excellent bee pasturage for several weeks. The sweet clover honey was very light in colour and of excellent quality, but lacked the very attractive flavour of the wild flower honey.

During the first few years that bees were kept at the Station the chief object was to decide if bees could be profitably kept in central Alberta. That bees can be profitably kept has been established beyond question, and for the last three years the number of bee-keepers has more than doubled annually. With this has come a very rapid increase in the demands on the Station for information. Experimental work on many problems in apiculture is now under way.

#### HONEY PRODUCTION AND INCREASES

Sixteen colonies were taken from winter quarters. From these the highest yield per colony was 220 pounds of extracted honey and an increase of one colony. At 20 cents per pound for the honey this was a revenue of \$44 and \$10 for the increase or a return of \$54 from one colony. The returns from the 16 colonies were 1,840 pounds, or an average of 115 pounds per colony of extracted honey, and 11 new colonies. The value of this was \$368 for the honey at 20 cents per pound, and \$110 for the new colonies at \$10 each, or a total return of \$478.



## WINTER PROTECTION

Six colonies were wintered outside, two in a double and four in a triple wintering-case. Twelve colonies were wintered in a room in a corner office basement where the temperature was kept between 40 and 50 degrees. In the spring one of the colonies wintered outside was queenless, two of the colonies placed in the basement were dead and one was queenless. As no queens were available, a frame of brood in all stages from two of the strongest colonies was transferred to the two queenless colonies and from these queens were reared. Usually the losses have been somewhat heavier in the bees wintered outside but those surviving are in better condition than those wintered inside. Possibly owing to the very mild winter there were no losses in the outside bees, and as those wintered inside were kept at a very uniform temperature of about 45 degrees, all of the bees, save those already noted, seemed to be in good condition in the spring.

## SUMMER PROTECTION

In this experiment fourteen colonies were compared. Five in Kootenai cases gave an average yield of 162.6 pounds of honey per colony; two colonies in Jumbo hives which were protected with wintering-cases until June 1, gave an average yield per colony of 146 pounds; two with brood-chamber only protected gave an average yield per colony of 129 pounds; while five unprotected colonies gave an average yield per colony of 95.4 pounds. These data indicate that protection is advisable wherever possible as the extra amount of honey would more than pay for the interest on the investment. While protection always given a slight increase, results have never before been so emphatic in favour of protected colonies as was the case during the past season.

## PREVENTION AND DETECTION OF SWARMING BY MANAGEMENT

Shallow supers were used on most of the colonies to facilitate the detection of swarming as indicated by the production of queen-cells. In all cases queen-cells were found on the bottom bars of the frames in the shallow supers. When the queen-cells were formed, the colonies were manipulated in two ways. In three colonies the queen and one frame of brood in all stages with adhering bees were moved into a new hive to form a nucleus for a new colony while a new queen was introduced into the old colony. These showed no further tendency to swarm. At no time were the hives allowed to become congested. In other colonies when queen-cells were formed had three or four frames of brood moved up into the super above the brood-chamber with a queen-excluder between; empty combs were used to replace the frames of brood in the brood-chamber. These colonies made no further efforts to swarm.

## COMPARING KINDS OF HIVES

Comparisons were made between the standard ten-frame Langstroth and the ten-frame Jumbo hives. While the Jumbo hives gave slightly better yields of honey, the standard ten-frame Langstroth with half super is preferred because this combination facilitates manipulation and detection of swarming.

## COMPARING RACES OF BEES

The object of this experiment is to compare Carniolan, Caucasian and Italian bees as honey-gatherers, for hardiness, resistance to disease, prolificacy and tendency to swarm. Four colonies of each race were started from three-pound packages. To the three-pound packages were added queens of each race for breeding of the different races. The Carniolan and Caucasian bees arrived on June 3, and the Italians on June 7. They were all treated exactly alike. Each colony was given 9 drawn combs and one comb of honey. On June 10,

These colonies were placed in an out-apiary 17 miles from the Station and visited regularly. The results of this experiment are summarized in the following table.

COMPARISON OF RACES OF BEES

Race	Number of colonies in group	Amount of honey produced		Average per colony		Number of combs drawn	Estimated honey left in combs		Number of queen-cells developed
		lb.	oz.	lb.	oz.		lb.	oz.	
Caucasians.....	4	80	00	20	00	56	100	0	43
Carniolans.....	4	50	00	12	08	46	130	0	34
Italians.....	4	220	00	55	00	87	120	0	6

This table indicates that during the season of 1926 the Italian race of bees was superior in every way to the Carniolan or Caucasian. All these bees arrived one month later than is considered advisable to start colonies from package bees as a crop of honey is to be expected. The production of more queen-cells by the Carniolan and Caucasian races indicates that these races have a greater tendency to swarm and a lesser tendency towards honey production than the Italian. The great number of combs drawn and honey produced indicates the greater prolificacy of the Italian race. The Carniolan and Caucasian were as easy to manipulate as the Italian.

### EXTENSION WORK

A very attractive exhibit was made at the Lacombe Exhibition. The Exhibition Association allotted one whole building for this purpose. The exhibit represented all the different lines of experimental work under way at the Station and included material from the garden and field crops as well as bees, poultry and live stock.

During the season, members of the staff judged garden and field crops, dairy products, poultry and live stock at several fairs, and addressed a large number of agricultural meetings.

On July 3 about 200 farmers and their families visited the Station for a field day on forage crops. The plots and field crops were at their best. The greatest interest was shown in the legumes and grasses. On August 4 rain and bad roads interfered with the field day for business and professional men. Nevertheless over 100 were present representing districts as far away as Calgary, Edmonton and Coronation. On August 11 a successful bee-keepers' day was held at the out-apiary located at Red Deer, 17 miles from this Station. Seventeen cars of people were at this demonstration. Other field days were planned but had to be cancelled on account of wet weather and bad roads.

The Station is located at the junction of two lines of the Canadian Pacific Railway and the Lacombe and North Western Railway. It is also on the Provincial Highway between Calgary and Edmonton, and between Banff and Jasper National Parks. As a result, in addition to a large number of Alberta farmers who frequently visit the Station, there is a rapidly increasing number of American visitors, many of them prospective settlers who are greatly surprised by the wide variety of field and garden crops grown "so far north."

The practical value of the experimental work of the Station is being annually more realized by farmers. This is indicated by the rapidly increasing number of farmers who visit the Station, by the request for publications of the Experimental Farms, particularly "Seasonable Hints", and perhaps most by the large annual increase in correspondence. Questions are asked on almost every conceivable problem in farming and 8,226 letters were mailed during 1926.

